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ABSTRACT

The Teenage Health Teaching Modules (THTM) program is a health education curriculum for adolescents. Each THTM module frames an adolescent health task emphasizing development of self-assessment, communication, decision making, health advocacy, and self-management. This module presents a discussion on the special physical and mental characteristics of adolescents. Six group activities are outlined: (1) physical growth and development in adolescence; (2) questions most frequently asked by teen-agers about puberty and development; (3) appreciating and taking responsibility for the body; (4) self-monitoring for good health; (5) the development of thinking abilities in adolescence; and (6) the developmental tasks of adolescence. A listing of other programs and resource materials is included. (JD)

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DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service
Centers for Disease Control

Memorandum

Date: February 1984

From: Director, School Health and Special Projects
Division of Health Education
Center for Health Promotion and Education

Subject: Teenage Health Teaching Module
UNDERSTANDING GROWTH AND DEVELOPMENT

To: Colleagues in School Health and Health Promotion

ED261034

The attached module, Understanding Growth and Development, is one of sixteen modules in the Teenage Health Teaching Modules (THTM) program. The overall goal of this health curriculum for adolescents is to provide secondary school students with knowledge, skills, and understandings that will enable them to act on behalf of themselves and others in health-enhancing ways. Each THTM module frames an adolescent health task and is designed to help students contribute to their own present and future health and well-being and that of the families, schools, and communities to which they belong.

The THTM program was produced under contract (CDC 200-79-0922) between the School and Society Programs of the Education Development Center, Inc., and the Center for Health Promotion and Education of the Centers for Disease Control.

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SP 026 472

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SP 026480

This is one module in the Teenage Health Teaching Modules (THTM) program, a health education curriculum for adolescents developed by Education Development Center, Inc. (EDC) and funded by the Center for Health Promotion and Education, Centers for Disease Control, Public Health Service, U.S. Department of Health and Human Services.

The overall goal of the THTM program is to provide secondary school students with knowledge, skills, and understandings that will enable them to act on behalf of themselves and others in health-enhancing ways. Each THTM module frames an adolescent health task and is designed to help students contribute to their own present and future health and well-being, and that of the families, schools, and communities to which they belong.

Official health and education agencies may also contact the School Health and Special Projects Office, Division of Health Education, Center for Health Promotion and Education, Centers for Disease Control, Atlanta, GA 30333, (404) 329-2829 or FTS 236-2829.

TEENAGE HEALTH TEACHING MODULES

Health Is Basic: An Introduction to the THTM Program for Teachers and Students

Understanding Growth and Development

Being Fit

Eating Well

Communicating in Families

Promoting Health in Families

Having Friends

Living with Feelings

Handling Stress

Protecting Oneself and Others: Smoking, Drinking, and Drugs

Preventing Injuries

Improving Health and Safety in the Workplace

Locating Health Resources

Using New Health Research

Acting to Create a Healthy Environment

Planning a Healthy Future

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Introduction

The physical changes that occur in adolescence are of great concern to teenagers. Nearly every young person has questions about how the process works and wonders if there are ways to speed it up, slow it down, or in some manner change the way puberty happens to him or her. Acceptance of one's own particular physique at any given moment in time seems hard to come by for the vast majority of early adolescents.

It is not only physical growth and development that matters to them, although the effects of one's body image on social and emotional development do loom especially large for young people at this age. They also wonder about how the mind works, and they are able to think about thinking in more sophisticated ways than ever before. It is a goal of this module to explain physical and mental growth and development in a way that simultaneously interests, informs, and reassures adolescents. The module is designed to help them make connections between their physical maturation and the intellectual, social, and emotional changes they are experiencing at the same time.

The module will provide students with a basic understanding of the biological facts of growth and change in adolescence. It will assure them that there is a wide range of normalcy, and that although people differ in all kinds of characteristics--their stature, body build, nose shape, hair texture, acne-proneness, or rates of change, to name a few--they are far more alike than different. The module will also introduce students to the concept of the interrelatedness of physical, cognitive, emotional, and social aspects of their development, a concept that will be reinforced in other modules as well. Students will be encouraged to assess their own growth toward several social development goals for adolescents and think about ways to further enhance their personal maturation process and to begin to take full responsibility for their own health and well-being.

This module encourages appreciation for those aspects of oneself that cannot be changed and those that could be if one decided to work on them; but most importantly of all it stresses self-acceptance. The message is: You may not be perfect. No one is. But you're just fine and getting better as you grow in self-understanding, as well as in mind and in body, during adolescence.

What Are the Special Characteristics of Adolescence?

At any given time during the teenage years, there is great variation among individuals within age groups on almost any dimension of growth: physical, mental, psychosocial. Although each teenager is different in what he or she is like or is experiencing at any particular time, teenagers are alike in that they all experience similar changes in order to become adults. The description that follows presents adolescence as a stage in life, and outlines the changes all individuals experience during these years, even though the timing and sequence of changes are subject to individual variation.

Physical Development

Adolescence is a period of extremely rapid growth. At times a teenager grows as fast as a two-year-old. The individual changes rapidly not only in size, but in contour and physical characteristics. Although the sequence of events is the same for everyone, there is great variability among individuals in the timing of physical development. The growth spurt can come anywhere between ages 8 and 13 for girls; boys generally lag about two years behind.

Almost all skeletal and muscular dimensions are affected by the growth spurt, but not to the same degree. For example, most of an individual's growth in height is due to elongation of the body trunk rather than to leg growth. Body parts do not grow at the same time or rate, but change in a fairly regular order: legs begin first; next, head, hands, and feet reach adult size; finally, breadth increases (shoulders last). At times, certain body parts appear quite out of proportion with the rest of the body.

The primary physical changes that occur during adolescence are due to the emergence of the secondary sex characteristics. For girls, the first external sign of puberty is growth of the breasts, followed closely by the appearance of pubic hair and then the growth spurt. Menarche usually comes soon after the growth spurt, and full reproductive maturity is achieved 12 to 18 months later. During this relatively infertile period, the ovaries mature, the pelvic bones broaden, and the distribution of body fat changes.

For boys, the first external sign of puberty is growth of the testicles, followed by the growth of pubic hair and the growth spurt. During the next phase the larynx grows and the vocal chords elongate, causing the voice to break and deepen. Facial hair appears next, followed by enlargement of the sweat and oil glands, which also become more active.

Unlike a rapidly growing two-year-old, teenagers are acutely aware of their physical growth. This fact, coupled with the variability of physical development among adolescents, naturally leads individuals to compare themselves to others. In the end, not all individuals find themselves in the same position physically in relation to their peers as they were before puberty. For example, the correlation between height just before the growth spurt and adult height is .80; therefore, not all adolescents who have been at the 30th percentile in height before adolescence will end up at the 30th percentile as adults; many may end up at the 50th or the 10th, some at the 55th or the 5th.

It has been recently recognized that the brain undergoes two distinct growth spurts during the preadolescent and adolescent years. During the periods between ages 10 and 12 and ages 14 and 16+ brain cells increased in size 5 to 10 percent and new synapses form at a very rapid rate, creating new circuits and connections throughout the brain.

Intellectual Development

People make great strides in cognitive development, as well as physical development, during adolescence. Proponents of brain growth periodization argue that it is during the periods of rapid brain growth that individuals learn higher level thinking skills. Between periods of growth, individuals sharpen and consolidate the skills they already have, but do not gain new skills.

According to Piaget and other developmental theorists, adolescence is a period of transition from concrete to formal

operations. That is, somewhere between the ages of 11 and 15,* individuals may develop the capacity to:

- deal with abstractions and create hypotheses,
- reason logically across many situations,
- solve problems that require consideration of two or more variables at the same time,
- form strategies and follow principles in solving problems,
- think critically about thought processes, and
- classify things by category as well as by perceptual properties and learn to shift easily between classification systems.

There is some evidence, however, that not all individuals acquire these capabilities or use them consistently. For example, they may use formal reasoning to solve certain types of problems, like calculations, but may not extend this ability to verbal problems.

Other cognitive abilities gained during adolescence include an increased memory span and other memory skills such as the ability to differentiate between perceiving and remembering, to use more sophisticated memory aids, and to store information in larger chunks.

Like developmental theorists, learning theorists also recognize adolescents' increased ability to think abstractly, to distinguish between superficially similar objects or ideas, and to deal with alternatives. Unlike the developmentalists, however, learning theorists do not see these abilities as heralding a drastic change in the actual structure of thought patterns, but as gradual acquisitions due to growing vocabularies of mediating labels, mastery of more and more difficult concepts, greater experience manipulating objects and ideas, and the experience of being rewarded for successful efforts.

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*These ages do not correspond well with the new information on brain growth periodization. Work is continuing in this area.

Social-Psychological Development

The social-psychological theories of adolescence universally describe adolescence as a period of transition from child to adult roles and of formation of a stable adult identity.* In the U.S. as well as in most other societies, adulthood is socially rather than biologically defined. Thus, during adolescence the individual not only matures physiologically but must learn those roles that society considers adult. At the most basic level, the adolescent must prepare to be independent, to form new relationships and restructure old ones, and to nurture and provide for others.

More specifically, in order to move from adolescence to adulthood, individuals must:

- form new and more mature relationships with age-mates of both sexes,
- achieve an adult social role as a man or a woman,
- accept one's physique and learn to use the body effectively,
- achieve emotional independence from parents and other adults,
- prepare for marriage and family life,
- select and prepare for an occupation,
- acquire a set of ethics as a guide to behavior,
- develop a social intelligence, and
- confirm previously learned concepts and gain problem-solving skills.

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*These theories have been subjected to increasing criticism recently. For example, in adolescence the theories place more emphasis on autonomy and the formation of a stable, independent identity than on the changing nature of attachment and intimacy in relationships.

Most theorists agree that adolescence--with these developmental tasks--is a more difficult stage for most individuals than middle childhood or early adulthood. However, there is a basic dispute in the literature over the amount of inner turmoil experienced by adolescents and the reasons for the turmoil. Adolescence was first characterized as a period of "storm and stress" by G. Stanley Hall and this theme has been carried through in the work of Erik Erikson, Anna Freud, Harry Stack Sullivan, and Peter Blos. Some theorists believe the turmoil experienced is rooted in internal characteristics of the individual (e.g., physiological changes of puberty, feelings of ambivalence about independence, the struggle to achieve a sense of identity, the conflict between needs for autonomy and intimacy).

The work of Margaret Mead and others suggests that much of the turbulence associated with adolescence arises from extrinsic (i.e., socially derived) factors rather than from intrinsic (biologically or developmentally determined) factors. For example, the fact that there are relatively few publicly acknowledged responsible adult roles for teenagers to assume contributes significantly to a sense of alienation and lowered self-esteem.

Social Influences of Adolescence

In his article "Adolescence in America," David Bakan suggests that adolescence itself is a social construct. He feels that three major American social movements have created the phenomenon of "adolescence": compulsory education, child labor legislation, and special legal procedures for juveniles--all of which have reduced the number of significant roles teenagers can play in our society.

While we maintain that adolescence is a period with its own special developmental demands, we agree with Bakan that the larger social factors also have a significant impact on adolescents' sense of themselves. Teenagers are faced with wider choices in education, occupation, and lifestyle arrangements than ever before. Social mores with regard to sex, drugs, and alcohol are changing so rapidly that it has become increasingly difficult for parents and teachers to provide timely and accurate information and appropriate guidance for teenagers. In many cases parents' lives are also in flux--changing marital or employment status forces parents to rethink many of their assumptions, and makes it difficult to keep ahead of, or even up with, their teenagers.

Because of increasing affluence and the poor labor market for adolescents, many young people are staying at home or in school longer today--allowing more time for deciding (and for becoming anxious about) what to do with their adult lives. At the same time, more and more individuals are reaching physical maturity at an early age, resulting in even greater disparity in physical, cognitive, and socio-emotional maturity within age groups, and for more individuals, a longer time span between reaching physical maturity and assuming adult roles.

Goals of the Module

This module will:

- Introduce students to basic biological changes that occur in adolescence.
- Assure students that there is a wide range of normalcy as they grow and develop.
- Encourage respect for individual variation in growth and development and tolerance for differences in others.
- Encourage students to prepare their bodies for good physical health throughout their lives, including attention to visual, dental, and reproductive soundness.
- Help students understand that they must take responsibility for their own good health as they become more mature.
- Encourage students to prize their physical, intellectual, social, and emotional abilities, recognizing those characteristics that are genetically determined and essentially unchangeable and those which are alterable if they so choose.

Module Overview

ACTIVITY	DESCRIPTION	INSTRUCTIONAL METHOD	# OF CLASS PERIODS
One			
Physical Growth and Development in Adolescence: An Introduction	Students consider how puberty happens, the effects of sex hormones on male and female development, and some basic facts about growth in adolescence.	Teacher mini-lecture, discussion, fact sheet on puberty	2
Two			
At Least Twenty Questions	Students can ask questions about growth and development and related phenomena. Teacher and guest resource persons answer or direct students to other appropriate resources.	Student questions/ answers by adults, discussion	1 - 2

Note: The numbers of class periods listed for each activity are suggestions only. Teachers are urged to make their own determinations based on the interests and abilities of their students.

ACTIVITY	DESCRIPTION	INSTRUCTIONAL METHOD	# OF CLASS PERIODS
Three			
Handle with Care: Appreciating and Taking Responsibility for Your Body	Students consider the importance of how adolescents feel about their physical appearance or abilities, and learn about self-monitoring to promote good health. They distinguish between those things people can change and those they can't, and privately identify what they like most and least about their own bodies at this point in their development.	Teacher mini-lecture, discussion, brainstorming, personal self-assessment	2
Four			
Self-Monitoring for Good Health	Each student designs a Health Improvement Plan, to be followed for one week, that will enhance some aspects of his or her physical health and development.	Student self-planning and goal-setting, using HIP Sheet and HIP Report	1

ACTIVITY	DESCRIPTION	INSTRUCTIONAL METHOD	# OF CLASS PERIODS
Five			
The Development of Thinking Abilities in Adolescence	Students compare their own thought processes with those of young children to discover some of the characteristics of thinking that develop as one matures.	Interviewing, small-group work, brainstorming, discussion	1 - 2
Six			
The Developmental Tasks of Adolescence: What Does It Mean to Grow Up?	Students are introduced to the concept of adolescent developmental tasks--physical, mental, social, emotional--and consider their own development on each one.	Student self-assessment inventory, teacher mini-lecture, discussion	1

Activity One

Physical Growth and Development in Adolescence: An Introduction

Objectives

Cognitive: Students will be able to:

- List at least three physical changes that occur at puberty.
- Give an example of how physical growth in adolescence is triggered by interaction between different glands, organs, or body systems.

Affective: Students will:

- Indicate increased appreciation of the intricacy and interdependence of all systems within the human body.
- Indicate increased awareness that they are or will shortly be biologically capable of reproduction.

Activity at a Glance

In mini-lecture discussion, using any or all of the suggested handouts on puberty, the teacher introduces the topic of physical growth and developmental changes in males and females between the ages of 12 and 18.

Preparation

1. Familiarize yourself with the introductory notes and the background information on each of the physical changes of adolescence (pp. 3-8). For more general framing of this lesson, you may also wish to review "What Are the Special Characteristics of Adolescence" following the introduction to this module.

2. It is suggested that the chart "Physical Changes of Puberty," be reproduced and handed out to students. You can decide how deeply or how briefly to discuss and explain each of the changes. Some teachers prefer making a wall chart on poster paper, newsprint, or blackboard to refer to during their presentation instead of or in addition to the handout.

3. Duplicate "Fact Sheet on Puberty," one for each student. (Note: All materials to be duplicated for students for use in that activity appears on boxed pages at the end of the activity.)

4. You may wish to invite the school nurse or physician to join your class for Activities One and/or Two of this module to assist you in clarifying fine points of physiological changes and to help answer specific questions students may have.

5. If you decide to have students write questions for the next activity as homework, have available 4" x 6" cards or plain paper for distribution to them.

6. In Activity Five students will have an opportunity to see how thinking changes and develops as people mature. The activity requires some preparation, either by the students or by you. Look ahead to that activity now, decide how you want to proceed, and prepare to explain the experiment sheets, "How Young Children Think," that you will distribute for homework at the end of this activity.

7. Duplicate "How Young Children Think," pages 64-71, one set of experiments for each student.

Procedure

1. Introduction

Before moving directly into the content of the next two or three day's work, it is important to set a comfortable tone

and put students at ease about the topic at hand. You are the best judge of how to make your students feel relaxed enough to listen well, respect one another's feelings and concerns about the topic, and ask questions they need or want to know. Perhaps you could share a personal vignette or mention a recent occurrence which illustrates that it is important to understand all we can about our bodies and how they grow and change, and that this is a lifelong phenomenon. Our bodies change throughout our lifetimes. But at adolescence there are many changes, occurring quite rapidly, and teenagers often are sensitive about them until they get used to them.

The topic of body changes and developmental growth is a very sensitive one for many adolescents. Often they have not discussed these issues before, perhaps not even with their parents or their very best friends. It is important to say something to them about the discussion that will ensue about their bodily changes in adolescence. You will want to tell them that these changes take place in all human beings, and that our secondary sexual characteristics are important and functioning parts of our bodies like our fingers or our ears.

Emphasize that it is important for them to know the names of the parts of their bodies, and to be able to talk about them appropriately at appropriate moments. If they do not know how to do that, they cannot explain adequately to a medical person what is going on in different parts of their bodies, and what questions they have about them, or they cannot describe "what happened" when it might be important. For example, if a young person is molested and doesn't know or is too embarrassed to use the words that describe "private" parts of a body, that young person cannot seek appropriate help and protection.

Talking about these things is a new experience, and sometimes when people are anxious or nervous about new experiences, they giggle and laugh because of their uncomfortableness. Or they make jokes, thinking in that way they can seem above it all, cool and sophisticated. But there is no need for this kind of response, because it is important for everyone to be able to talk about their bodies in a straightforward and respectful manner. And with a bit of practice you get used to it, just as doctors, nurses, physical therapists, athletic trainers, and others who work with the human body do to keep it in good running order.

So, as students begin to talk together about the human body and its functions, it will be important to keep the following guidelines in mind:

- All students have the right to ask questions and state opinions in an atmosphere of respect and thoughtfulness. There is no reason to laugh or jeer at each other in such a discussion.

- No one will be asked to speak out or put forward a statement if he or she does not choose to. No one will be called on.

- Students must be sensitive of each other's feelings at all times.

- Students will not use any "put-down" statements in the discussion.

- Students will choose and use words and terms appropriate to the discussion.

- The class will let speakers finish a question or statement without interrupting them. Students will wait until the speaker has finished what he or she wants to say before indicating a desire to respond.

A large part of growth and development, becoming grown up, is the ability to discuss things in a serious way, and to be courteous of the rights of others.

Because this information will be new to many of your students, and physiologically based, it is important to deliver the mini-lecture in a nonstressful manner. You should be relaxed and take time to see that students are understanding the information as you go along. You may want to use the blackboard to make simple diagrams, or arrows--devices to slow the pace, make students comfortable, and give them time to let things be internalized as you go along. Your manner and ease of presentation will do a great deal to reassure students that this is a natural, legitimate subject for intellectual discussion. In a relaxed manner invite students' questions as you go along so that this can be an interactive session.

Several basic points should be emphasized in your lecture-discussion:

- The human body is an intricately interconnected mechanism; minute secretions can cause major changes; the brain controls all.

- The secretion of sex hormones at puberty drives physical growth and sexual maturation in adolescence, and affects feelings as well.

- Students can rest assured that in the vast majority of cases, an individual's development is normal for him or her. Different rates of growth and change are sometimes hard to live with when you are the one who seems out of phase, but encourage students to be gentle with themselves; things will, for the most part, work out all right. If a student really believes that something is awry and he or she is not developing "normally," suggest local resources (school nurse, physician, clinic, counselor) for individualized discussion of the meaning of these changes.

- The biological bottom line of the changes in adolescence is that boys become men and girls become women who are reproductively mature. This fact, obvious though it sounds, is sometimes overlooked by young people for a number of understandable reasons. It is important to stress because it underscores the need for responsible health decision making in terms of relationships with others, care of the body, disease prevention, diet, drug and alcohol use, fitness, and environmental quality. Students who view the changes of adolescence as profound, who see themselves as biological adults, have more reason to take themselves and their health choices seriously. Decisions they make today may not only affect their own health and well-being now, but that of themselves and children they may choose to have later.

2. Teacher Mini-Lecture

HOW PUBERTY HAPPENS*

During adolescence the brain and the glands that control growth and maturation work together to spur the development of the physical characteristics that mark puberty. Briefly, this is what happens:

The growth spurt is the obvious rapid growth in height and weight during adolescence. When it starts depends largely on each individual's genetic inheritance. It seems to be controlled by an area in the basal part of the brain called the hypothalamus. The hypothalamus secretes hormones that stimulate the pituitary gland. This gland then releases a hormone that results in body growth. Researchers think that the hormone

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*Accepting My Body, Family and Community Health Through Caregiving Program (Newton, MA: Education Development Center, 1981), pp. 6-7.

production of the hypothalamus increases as adolescence approaches and causes the growth spurt.

Hormones are a mechanism for change. The body's endocrine (ductless) glands secrete hormones directly into the bloodstream. Each hormone has a specific purpose and affects a specific part or function of the body. There are about two dozen different hormones secreted by the body. Many have some influence on puberty, some directly (stimulating the growth spurt), some indirectly (regulating metabolism, on which growth depends).

During puberty an individual becomes physically capable of reproduction. This development is also triggered by the hypothalamus, which again stimulates the pituitary gland. The pituitary gland sends hormones to the adrenal glands, which are small pieces of tissue lying on the top of the kidneys. The adrenal glands in turn produce hormones that activate the reproductive organs. The reproductive organs produce hormones that bring about the changes called puberty.

With all these complex activities going on in the body, it's little wonder that people vary so much in growth patterns during adolescence. These complicated changes involving the brain, glands, skin, bones, muscles, and sex organs in turn create new feelings, sensations and awarenesses. Situations or people in an adolescent's life take on new and different meanings and need new and different responses. Understanding these changes and recognizing the links between mind and body help us manage them--and respect them.

3. Chart Activity

Using the chart "Physical Changes at Puberty," highlight the various bodily changes depicted and give students an opportunity to ask clarifying questions or share observations about them. Stress the interconnectedness between the brain, the genetic code everyone is born with, the pituitary gland, adrenal cortices, and the ovaries and testes (respectively), all working together to produce the sequence of hormonal changes that causes the changes in secondary sex characteristics that mark puberty.

4. Lesson Conclusion and Assignment for Next Class

Pass out the student handout "Fact Sheet on Puberty" and use it to summarize the day's lesson. Tell students that the

next class will be devoted to answering their questions about physical growth and development. They should think about any questions they have and be prepared to write them down at the beginning of the next class period. This gives students the opportunity to think overnight about what they want to know and word their questions with care.

If you are inviting the school nurse or physician, or another teacher of the opposite sex, to help with the discussion, let the students know now. Indicate your desire to make the next class a deep and serious discussion of anything that is on their minds about the whys and wherefores of the changes that have been, or still are, or will be happening to them.

Variation: You may prefer to have students write down their questions at the end of this class period so that you can collect and review them to prepare to answer them more fully at the next class meeting, or alert your guest resource people to the direction the questions may lead. (Remember, you don't have to be an "expert" to effectively answer their questions or direct them to a good source.)

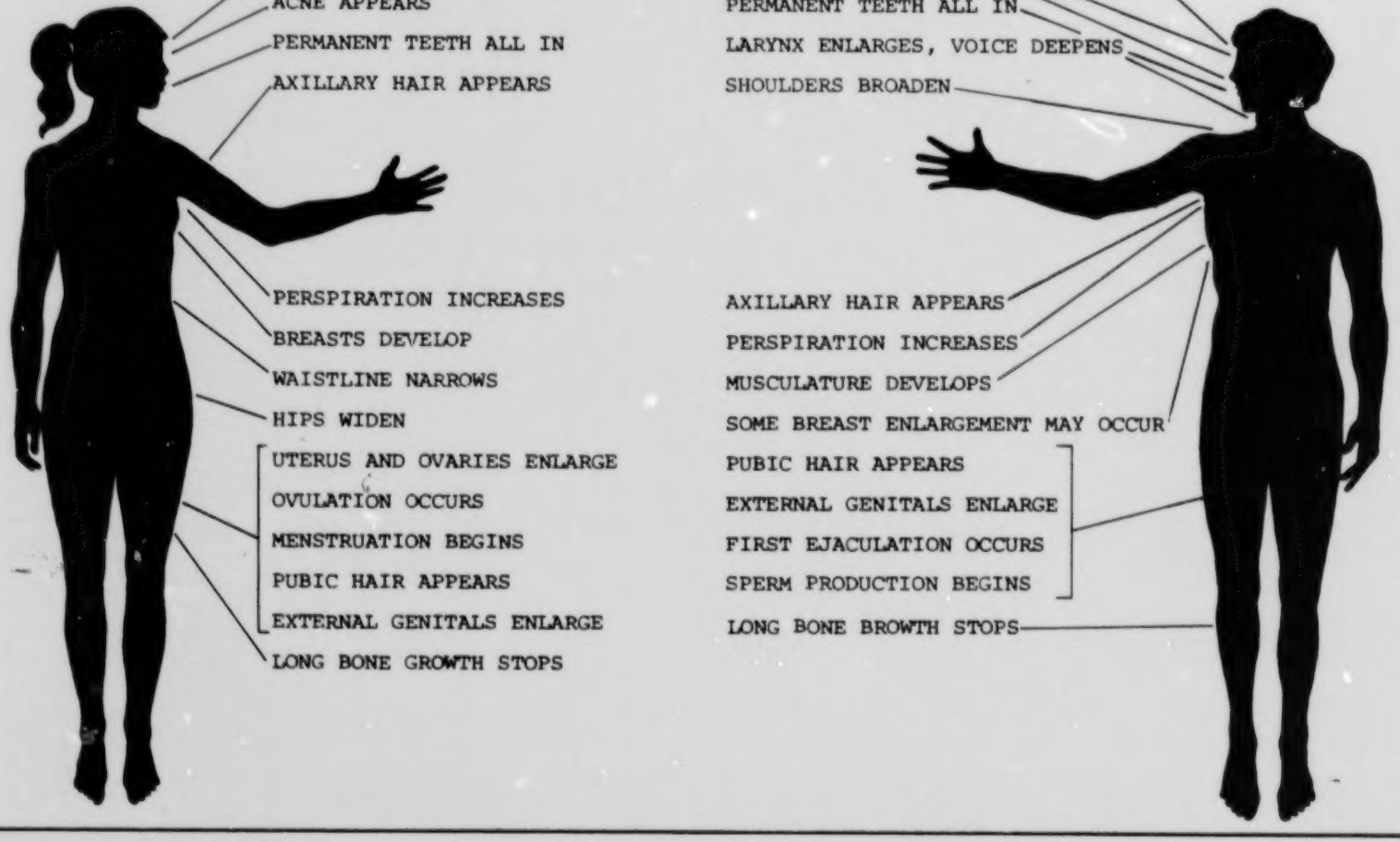
5. Homework (Preparation for Activity Five)

Explain to students that adolescence is not only a time of great physical growth, it is also a period when the mind is changing. In Activity Five, they will begin to discover some of the special thinking abilities they have now that they did not have as young children. To prepare for that activity, they will conduct an experiment. They will interview a four-, five-, or six-year-old child using a set of "thinking questions."

Distribute copies of "How Young Children Think," and go over the instructions with students. Be sure to emphasize the cautionary note in the instructions: the students, as interviewers, must be very careful not to pass judgment on the child's answers, and not to think of them as "right" or "wrong."

Explain that not every student has to do all four experiments, but be sure that each experiment is done by at least two students so there is a basis for later comparisons. The comparison is important. Since there is always variation in development, every young child responding to the experiments may not reveal the typical patterns of reasoning for his or her age. Having several responses to each experiment will increase the chances of eliciting one or more customary patterns. Differences in responses can then be used to point out that there are variations in mental development, just as their are in physical growth.

PHYSICAL CHANGES OF PUBERTY



FACT SHEET ON PUBERTY

1. The average age at which the physical growth spurt for females begins is 12, but it can begin as early as 8 and as late as 17.

2. On the average, the physical growth spurt for males begins around 14, but it can begin as early as 11 and as late as 18.

3. Not all parts of the body grow at the same rate. First, legs grow longer, then hands, feet, and head reach adult size. The muscles grow to "fill out" the body's framework. Finally, shoulders broaden, and mature proportion is achieved.

4. Girls generally achieve their adult height and stature between the ages of 15 and 18, and boys between 17 and 20. Adolescents today are taller and sexually more mature at a younger age than adolescents in the past. Their growth spurt begins earlier, and their rate of growth is faster. They reach maximum growth about two years sooner than adolescents did two or three generations ago.

5. There is enormous variation in individual growth patterns. What is normal for one person is different from what is normal in another. No two people develop exactly the same way or at the same time.

6. The average age of first menstruation in girls has dropped over the years.

1879	16.5 years
1930	14.5 years
1950	13.5 years
1973	12.6 years

7. First ejaculation in boys occurs at an average of just under 14 years, but it can occur as early as 11 or as late as 16.

8. Boys can impregnate girls after they start to ejaculate. Girls can become pregnant after they start to menstruate.

9. Puberty is the time when an individual becomes capable of reproduction. It is not a single event but a network of growth.

In boys these changes include:

- general growth in size, both in height and in weight
- growth of body hair under arms and on face, chest, limbs, and groin
- activation of sweat glands
- enlargement of the larynx (voice box), which deepen the voice
- development of typical male physique: broad shoulders, relatively narrow waist, stronger muscles (and sometimes temporary breast development)
- maturation of reproductive organs (penis and testicles) and start of sperm production

In girls these changes include:

- general growth in height and weight
- growth of body hair under arms, and on limbs and groin
- activation of sweat glands
- development of female physique: relatively wider hips, narrower waist, fuller breasts
- maturation of reproductive organs (uterus and ovaries) and start of menstruation

10. Growth in adolescence is triggered by hormones, but what you eat can strongly influence your physical character. It may not alter how tall you become or how fast you grow, because your genetic inheritance governs that. But what you eat can affect how you look--your weight, your complexion, your hair, your energy.

Adapted from Accepting My Body, Family and Community Health Through Caregiving (Newton, MA: Education Development Center, Inc., 1981), pp. 8-9, 12.

Background Information for Teachers

Physical Changes of Puberty*

Brain and Endocrine Function. The chain of events that results in the physical changes of puberty begins deep in the brain in a relatively small area called the hypothalmus. At exactly the right time according to the individual's inborn time clock, the hypothalmus secretes minute amounts of peptides (amino acid combinations) which stimulate the anterior pituitary gland situated nearby. The pituitary gland is about the size of a pea, but its influence is tremendous. It is called the "master" gland because it secretes at least six hormones that directly affect other glands which control, among other things, growth and sexual maturation. As the pituitary hormones circulate in the bloodstream they in turn stimulate the adrenal cortex, the outer part of the adrenal glands, situated just above the kidneys, to secrete hormones that affect metabolism, salt balance, and sexuality. The secretion of sex hormones by the adrenal cortex in turn stimulates the ovaries or testes to begin to secrete more hormones which in turn cause the secondary sex characteristics of puberty to begin to happen.

How does the body know just when to begin this complex and beautifully intricate process? That is one of the essential mysteries of life, which scientists are only just beginning to understand.

Role of Hormones. Hormones are chemical substances that serve as messengers and stimulators of body glands. For example, the pituitary secretes two very important hormones, a growth hormone (somatotropin) and a sex-stimulating hormone (gonadotropin).

The precise role of the growth hormone is not fully understood, but it seems to affect the production of other hormones in the adrenal glands, the thyroid, the thymus, and the pineal gland to stimulate change in height, weight, and muscle mass.

Better undertstood is the role of the gonadotropic hormone. In women, it stimulates the ovaries to produce estrogen and

*Additional information on changes in adolescence can be found in The Biology of Adolescence by Herant Katchadourian (San Francisco: W. H. Freeman and Co., 1977).

progesterone. It controls ovulation, menstruation, pregnancy, lactation, and the advent of menopause. In men, it stimulates the production of testosterone and other androgens which result in genital growth, development of the tubules that carry the sperm, actual creation of sperm, and it also influences muscle development, voice change, and predisposition to acne.

It is interesting to know that it is normal for both males and females to have both estrogens (female hormones) and androgens (male hormones) in their bodies. Of course, males have more androgens and females have more estrogens, which determine their respective biological maleness or femaleness.

Sweat Glands. Another physical change at puberty is the activation of the sweat glands, most noticeably those under the arms. This is one of those almost overnight phenomena; you may play basketball every afternoon after school without noticing any particular perspiration and no odors until one day you realize that things are different. Showers and deodorants suddenly assume a new importance in your life. Perspiration is a normal bodily function. It is the way adult bodies cool off and maintain a constant temperature.

Stress can also cause perspiring, sometimes to the point where a person becomes self-conscious about clammy hands or excessive underarm wetness. The adrenal glands are working overtime in these cases, pumping extra hormones into the bloodstream. This causes blood vessels to constrict and sweat glands to activate. Maybe it's because the body settles down or maybe it's because we learn how to handle stress better as we move through the adolescent years, but it does seem to be true that people in their twenties are less troubled by excessive perspiration.

Skin. When sex hormones begin to circulate in the bloodstream, it is possible that acne pimples will pop up on the face, neck, or upper chest and back. The worst periods for acne are between the ages of 14 and 17 for girls and 16 and 19 for boys.

There is little that can be done about a normal case of acne, other than careful cleansing, washing the hair often to decrease oiliness around the hairline, eating a balanced diet including lots of fruits and vegetables, and using some over-the-counter preparations to help dry the pimples out. Knowing that the condition is temporary may not be very reassuring as one stands before the mirror on a particular morning, but one small comfort is to view the condition as one more badge of sexual maturation.

A severe case of acne is another matter, however, and a visit to a doctor or a clinic is in order. There is no evidence that medical treatment "cures" acne or shortens its natural course, but it can help prevent serious scarring.

Teeth. By the age of 12 or 13, most people have 28 permanent teeth. The last of the so-called "baby teeth" are gone, and it will take about five years or more for the wisdom teeth (third molars) to erupt, usually around age 18 or 20. Then, the full adult set of 32 teeth is complete.

Unfortunately, during the years between 13 and 16, more cavities appear than during any other similar period of life. This is probably due to the fact that teenagers lead busy lives, tend to snack more, and don't stop to brush as often as they should. Regular brushing and flossing, periodic dental checkups, drinking flouridated water (or using flouride toothpaste), and careful monitoring of the intake of sweets are all very important for healthy teeth and gums, now and later. These practices work against the harmful buildup of plaque (a film of bacteria which hardens and calcifies around the gum line) which can lead to periodontal disease--infection of the gums and bones that support the teeth. This is serious because it can cause toothache, or worse, tooth loss as an adult.

Sometimes teenagers worry about how their teeth look--color, size, straightness, or bite. Size and color are genetically determined for the most part, although some antibiotics and other substances can yellow the enamel. Malocclusion, or irregular alignment of the teeth, can cause serious problems with eating, speaking, or self-image. Fortunately, dentists can usually correct this kind of problem.

Female Changes in Puberty

Female Growth Spurt. The period of rapid growth in girls normally occurs between the ages of 10 and 15. Typically, it begins about age 10 1/2, peaks at age 12, and ends about age 14 when 98 percent of a girl's mature height is reached. She may still continue to grow very slowly until age 19 or so. Girls are generally about two years ahead of boys in reaching their full adult height.

With the growth spurt often comes the progressive loss of so-called "baby fat" (in both boys and girls), especially from the arms and legs. In addition, the hands and feet elongate first, then the legs, and later the trunk. Both these factors contribute to a somewhat awkward and gangly look for a while, until the female figure rounds out.

The earlier sexual maturation of girls, with the increase in sex hormones causing long bone growth to stop sooner than it does in males, explains why males are about 10 percent taller than females as adults. The later-maturing males simply have more time to grow. This knowledge can be comforting to both males and females during the one or two years when girls seem to be head-and-shoulders above their male age-mates. By age 16 or so, the growth spurts are over for almost everyone and height becomes a matter of less consequence.

Breast Development. Breast development is the most reliable indicator in females that puberty has begun. It always precedes first menstruation, and may begin as early as 8 or 9 years or as late as 13 and be perfectly normal. First, the area around the nipple (aerola) widens; then the nipple and areola begin to protrude; and finally, the fully rounded breast takes shape. This final stage of breast development may not be reached until age 19 or so.

The breast contains about twenty milk ducts as well as many small glands, arteries, veins, nerves, and fatty tissue. There is one main opening in the nipple, and several smaller ones--all in biological preparation for nursing an infant. Nipple color ranges from very pale pink to dark brown, depending on one's complexion.

Breast size is another of those physical characteristics which is basically determined by one's heredity. Overall body weight is also a factor. Some women experience slight changes in size and tenderness just before they have their periods each month. Exercise may strengthen and firm pectoral muscles, but it doesn't increase breast size very much.

Breasts are quite often assymetrical during adolescence, causing some girls to wonder if something is wrong with them. Time virtually always evens things out.

Probably the most important thing to know about breast development is this: size and shape have no bearing on adult capacity to respond to sexual stimulation or to nurse a baby.

Body Hair. The second sign of puberty in girls is the appearance of pubic hair, occurring about age 11 or 12. This event precedes the development of leg and axillary (underarm) hair by a year or two. At first, the pubic hair is straight and fine, gradually becoming coarser, darker, curlier, and taking on the characteristic triangular pattern of the adult woman.

Occasionally, a hormone problem or glandular imbalance can cause excess hair growth on the face or elsewhere, but, in most cases, the amount of hair people have on their bodies is genetically determined. That is, if your ethnic origins are from the Mediterranean region (Greek, Spanish, Italian, Semitic, etc.) you are more likely to have more body and facial hair than if you are African, Oriental, or Scandinavian.

Menstruation. Menarche (men-ar-kee), or first menstruation in girls, normally occurs sometime between the ages of 9 and 18 years. Most girls have started by the time they are 13 or 14. It usually happens about two years after the breasts first begin to develop and following the peak of a girls' growth spurt. First menstruation is one of the most clear-cut physical milestones in a woman's life: it announces that reproductive maturity and fertility has arrived.

Menstruation is stimulated by the hypothalmus and pituitary glands. These trigger glands control the amount and timing of the release from the ovaries of estrogen and progesterone--the female sex hormones--which in turn control the menstrual cycle.

Estrogen release causes the lining of the uterus to build up with blood and nutrients for the first two weeks of the cycle. On approximately the 14th day of the cycle one or more eggs are released from an ovary to travel down the Fallopian tube toward the uterus. At that time, the release of progesterone further increases the nutrients in the uterine lining, creating an environment to support a fertilized egg. If the girl does not have intercourse and no sperm meet the egg, the production of estrogen and progesterone decreases rapidly and the uterine lining--not needed to sustain an embryo--naturally breaks down and leaves the body through the vaginal opening in the form of menstrual flow. About two ounces of blood is lost in this process. It is readily replenished by the body as long as an adequate diet is maintained. After four or five days, the cycle begins again with the build-up of the lining of the uterus in preparation for the next month's egg.

For most women, the complete menstrual process takes about 28 days, although some women have normal cycles varying anywhere from 26 to 34 days or so. Menstrual cycles are often irregular during the teenage years, but on the average, by the time a girl is 18 her cycle is regular and she can predict exactly when her period is due. Irregular periods can also be caused by other factors such as emotional stress, drastic weight change, drug use, illness,

or jet lag. And, of course a missed period is usually the first sign of pregnancy.

During the menstrual flow, or the time of a woman's "period," women use sanitary napkins or tampons to catch the flow of menstrual discharge. In the past few years a disease called toxic shock syndrome, or TSS, has been diagnosed mainly in tampon users, although anyone can get it. It occurs rarely, but can cause death. When it is found in young women, it occurs especially in 15- to 19-year-olds, during or just after menstruation. Symptoms of the disease appear quickly and require prompt treatment. They include a sudden high fever, 102 F (38°C) or higher, vomiting, diarrhea, fainting or near-fainting when standing up, dizziness, or a rash resembling a sunburn. To possibly reduce their chance of getting TSS, women have been advised to use the least absorbent tampon needed to control menstrual flow and each day of their period to alternate tampon use with menstrual pad use. A woman who has had TSS symptoms in the past should talk to her doctor before using tampons again.

Menstruation is one of the most remarkable phenomena of the life cycle, regularly reminding every woman of the intricacy and wonder of human growth and development and her capacity for childbearing.

Genitals and Internal Reproductive Organs. At approximately age 11 or 12, the uterus enlarges and its inner lining becomes thicker and more muscular in preparation for future childbearing. The walls of the vagina also thicken and secretions change from alkaline to acidic. Simultaneously, the external genitals, or vulva, increase in size. The labia and the clitoris become more sensitive than before.

The ovaries change less than the other parts of the reproductive system because these organs are quite complex and remarkably well developed when a girl is born. At birth, all the eggs she will ever develop are already inside her ovaries. These eggs mature at puberty with the rush of estrogens into the bloodstream, and are released, usually one at a time, as part of the woman's monthly menstrual cycle. The nature and timing of this cycle is still not fully understood by scientists, but we do know that diet, environmental factors, drugs, emotional stress, and other factors, in addition to heredity, can affect reproductive maturation and capacity.

Capacity to Conceive a Baby. Often in the midst of so many physical changes taking place at puberty, girls may not be fully conscious of the "bottom line" of the entire process.

It is simply this: at puberty, a young woman is able to conceive a child. Her body reaches reproductive maturity at 14 or 15, often as young as 12 or 13, and she knows that she is forever changed. It is a tremendous responsibility to recognize that you are no longer a child, but a potential mother. The failure to fully and personally comprehend that one is able to have a baby has been part of the reason for so many unplanned teenage pregnancies.

Most adolescents know they are not actually ready to be mothers yet. Biological capability alone does not a good parent make. That is why it is so important for every young woman to understand the physical changes that occur in adolescence, consider the wonderful potential for new life inside her, and thereby be better informed about her responsibility for her own health and that of the children she and her future partner may someday choose to have.

Male Changes in Puberty

Male Growth Spurt. Between the ages of 11 and 16, males have a phase of rapid growth in stature. Exactly when a boy begins to get taller depends on his own internal biological timeclock. It usually begins at 12 or 13 and peaks at about 14, with some males growing 3 to 5 inches in a single year. About 98 percent of adult height is attained by age 16, although some males continue to grow until about age 20.

Both legs and trunk elongate during the growth spurt, but not at the same time. The legs lengthen first, which gives teenagers a lanky look for a while; but in about a year, the spurt in trunk length occurs, balancing body proportions. The cessation of growth is in fact due to sexual maturation--that is, the long bone growth stops with bone ends closing over as the result of the increase of sex hormones in the body during puberty.

Early or late maturation is a matter of heredity--if parents matured late, the adolescent probably will, too. There is no correlation between when one begins the growth spurt and eventual height, that is, an early-maturing boy may end up shorter than his late-maturing friend, or vice versa. Although society tends to put a premium on size in males, height really has nothing to do with one's manhood or masculinity--it is simply part of his unique and remarkable genetic package.

Body and Facial Hair. Boys typically begin to develop pubic hair between the ages of 10 and 15. Gradually, the hair thickens and gets darker and curlier, as it spreads over the scrotum and above the base of the penis. Hair continues to

spread up the center of the abdomen until about age 25. At about 14 or 15, hair appears in the armpits and on the upper lip, followed by more hair on the cheeks, chin, and other parts of the body by age 17 or 18.

Some males have a great deal of hair on their chest, arms, legs, or back, and some are relatively hairless. Either is normal. Variations are due to genetic differences or racial or ethnic background. As a rule, Blacks and Orientals have less body hair than Caucasians. Lack of chest hair is rarely linked to hormonal deficiency.

At puberty, another change in hair distribution takes place: the hairline on the forehead begins to recede. This, like the other physical changes in males, is the direct result of the secretion of the hormone, testosterone, into the bloodstream.

Voice. One of the later events of puberty for boys is the change in their voices. As the larynx, or voice box, enlarges, the male voice deepens. This usually occurs between the ages of 14 and 17. In some it seems to happen almost overnight. But most young men just have to get used to a year or two of "cracking" and having their voices leap out from under them in midsentence.

Girls' voices also deepen a little in late adolescence, but the change is not as marked as it is in boys.

Muscles and Body Contours. Muscular growth in males usually peaks about three months after full height is reached, with shoulders broadening noticeably, leg muscles, arm muscles, and neck enlarging. Although maximum gain in muscle cell development begins at about age 10 1/2, the size of the muscle cells keeps increasing until the man is in his late thirties or even older. Because different parts of the body develop on different timetables, adolescents experience a lack of coordination for periods of time until full growth is achieved in all body parts and the mature body establishes coordinated movement.

Before puberty, there is very little difference in muscular strength between males and females, but afterward, males are measurably stronger, pound for pound. The teenage years are characterized by steady growth in skill, power, and endurance. Special exercises and carefully supervised programs of weight lifting can help a young man develop both his muscles and his lung capacity, but such activities should not be started too early. In the last analysis, one's genetic package is the chief determiner of his physique and muscular development.

Genitals and Internal Reproductive Organs. The external male genitals are the penis and the scrotum, which encases the testes. These organs undergo remarkable increase in size during puberty. Between the ages of 8 and 15, at an average age of 12, the testes begin to grow. It takes about three years for the process of genital development to be completed.

The genitals do not change very much in size or appearance all through the years from early childhood to just before puberty. Then, with the hormonal awakening, the testes enlarge, pubic hair appears, the growth spurt begins, the penis elongates, the scrotal sac becomes darker and coarser in texture, the prostate gland enlarges, and sperm production begins. The process is truly wondrous, a source of pride and sometimes of worry if the person does not understand what is happening to him.

The major concerns expressed by adolescents have to do with rate of change in or size of the genitals. The rate, of course, depends on the boy's internal biological timeclock. The question of size is a matter of understanding that the shape and size of the genitals are not an indication of masculinity, or physique or virility or the ability to give and receive pleasure. Like noses or feet, penises vary in size and shape from man to man, but they all function just about the same.

Ejaculation. First ejaculation is always an important event in the life of a male. It is a key physiological development of puberty, somewhat analogous to menarche in females.

Ejaculation is the discharge of semen during orgasm. The semen consists of sperm from the testes and other secretions from the prostate gland and seminal vesicles. About a teaspoon of this whitish fluid is ejaculated in spurts. It may contain as many as 400 million tiny sperm!

There is enormous variation in the timing of first ejaculation--it has occurred naturally as early as 8 and as late as 21. For most boys, it occurs about a year after testicular growth begins and about the same time as the appearance of pubic hair, between the ages of 11 and 16. Many boys experience first ejaculation in a nocturnal emission, or wet dream, during sleep. First ejaculation is one more visible sign that the hormones in a boy's body are at work, and that he will shortly be capable of reproduction.

Capacity to Father a Child. For males, what is the big message that all these changes signal? Answer: Men who have attained puberty are equipped and able to impregnate a woman and thereby father a child. It can be hard for a 12 or 14 year old to really believe that all of the secondary sex characteristics catalogued here, whatever their intrinsic value and meaning, add up to external announcements that he has become a man who is capable of, in turn, creating new life.

Just as most teenage girls are not ready to be mothers, most teenage boys aren't ready to be fathers either. Choosing parenthood is one of the most profound far-reaching decisions any person, male or female, can make. That's why it is very important for adolescents to know themselves, know their bodies, acknowledge their biological reproductive capability, and manage it with care.

Activity Two

At Least Twenty Questions

Objectives

Cognitive: Students will be able to:

- Identify at least three human or institutional sources of answers to questions they may have about their bodies or their growth.

Affective: Students will:

- Appreciate that they are not alone in wondering about facts of life and growth.
- Feel more comfortable about asking questions about growth and development which will further self-understanding and self-acceptance.

Activity at a Glance

Students raise questions, to be answered by the teacher and selected guest "experts," around the issues of growth and development in adolescence.

Preparation

1. Spend some time reviewing your knowledge of adolescent growth and development and recalling your own experiences as a teenager. Don't feel you must know everything, but be sure you have some ideas about where students (or you) could go to find out anything they ask. An excellent resource for

teenagers and adults is The Teenage Body Book, by Wibbelsman and McCoy (New York: Simon and Schuster, 1978, $7.95). It would be especially worthwhile to have as a reference for this activity since it is organized around adolescents' questions and provides straightforward, in-depth answers.

2. If you invite other adults to assist you in this session, share the chart, the fact sheet, and the background information from Activity One with them beforehand. It's good to have both male and female perspectives on some questions, and it is also good for students to see a man and a woman at ease with each other as they respond to student queries about developmental issues. Remember that your relaxed and direct manner will be as important as your factual answers in helping students further self-understanding and acceptance of perceived differences in themselves and others.

3. Have available 4" x 6" cards or plain paper to distribute to students.

Procedure

1. Student Questions

Review the ground rules for discussion with the class that appear in Activity One under "Introduction," pp. 14-17. Remind students that when they are nervous, they might feel like giggling or laughing, but maturity is a matter of self-control, and for the most part a laughter response can be controlled. Learning to ask good questions enables the questioner to get good, reliable answers from people who really know. Learning to manage our bodies and our feelings is an extremely important part of growing up, and to do this everyone needs good, reliable, up-to-date information. Encourage students to be as comfortable as possible and respectful of others' thoughts and feelings to make the question session a time for serious information sharing.

If a student does laugh nervously, ignore it and go on. If a student is laughing to gain attention, and trying to get others involved, you might stop and say, "Let us take a couple of seconds to get our feelings under control, to relax, take a deep breath, and then go on with the discussion in a mature way."

Distribute the 4" x 6" cards (or plain paper) to students and ask them to write down three questions that they have

wanted to ask for a long time or were triggered by the poster and discussion from the last class period. (This, of course, is if you did not use the variation at the end of the last activity calling for students to write down their questions at that time.) Suggest that they make one of the questions about the growth and development of the other sex, because one of our objectives here is for them to know more about how males and females are similar and different. Urge them to be mature in their intent and assure them you will be candid in your responses. Communicate an adult-to-adult seriousness and the expectation that students will welcome this opportunity to ask questions and hear straight talk from adults about the physical changes they and their friends are experiencing.

2. Question-and-Answer Period

Collect the cards and shuffle them to assure anonymity. Go through the entire stack answering the first question on each card, then through again on the second question, and again through for the final question on each card. (There are sure to be duplications.) Keep things moving briskly so that all students will have an answer to at least one and possibly all three of their questions. If you are doing this with other adults, share the answering as it seems to make the best sense. Everyone doesn't have to comment on everything.

It's perfectly all right to say, "That's a good question which I haven't really thought much about before and I'd like to have a chance to think about it before I answer," or "I understand why you might want to know about my growing-up experience, but I'd be more comfortable not responding to that one right now," or even a simple "I don't know the answer to that." If you cannot or prefer not to answer a question, refer the student to another source or ask the class or your visitors, "Where could we go to find out the answer to that one?" The entire exercise should raise people's levels of comfort with asking questions and implicitly illustrate that there are answers to everything if we can just know where to turn for them.

What kinds of questions are you likely to get? Here are some examples of questions asked by 14- and 15-year-old students:

When will I know I have stopped growing?

What controls the time when the sex hormones begin to do their jobs?

I've heard that everyone has both male and female sex hormones in their bodies. Is that true? Doesn't that mess things up?

Do those breast developer things work?

Is it true that if a boy has a bigger penis he has a stronger sex drive or is able to perform better?

Does everyone have to have their wisdom teeth removed in their late teens?

If my parents are both under 5'6", will I necessarily be short?

When does acne go away of its own accord?

When will my leg hair get thick and dark like my brother's?

Does everything grow together or at different rates? (I mean, my feet seem to be out of proportion to my legs and body now.)

What causes cramps when a girl has her period?

If your period comes early or is delayed, is anything wrong?

Does the penis have to be a certain length to get a girl pregnant?

When will a guy's voice stop cracking?

If a girl jogs a lot can she stop her periods from coming?

What age must a girl be before she can get pregnant?

What age must a boy be before he can make a girl pregnant?

What makes breasts grow?

How many eggs can a woman release?

Why do girls sometimes get mad or cry easily when they have a period?

What is menopause?

Do girls with bigger breasts have stronger interest in sex than girls with smaller breasts?

In choosing your answers you want to indicate in tone or in words that:

- The student is perfectly normal to be thinking of that question.

- You want to legitimize the question by asking the questioner to bring the answer back when he or she has found it, so that it can be shared with the group. If you take the responsibility to seek out the answer from other resources, you should reassure the group that you will share the answer when you find it.

- Some questions may have religious implications; different religious groups have different perspectives, and each point of view is legitimate and appropriate for its own members.

If a question on breast size is asked, for example, try to figure out what is behind the question, and answer it as clearly and dispassionately as you can. You might say, for example,

> "Breast size is inherited to some degree, just as the size of one's fingers, the shape of one's toes, or the size of one's ear lobe are inherited characteristics. The differences in size of these body parts do not determine how they function. Big ears do not hear more than smaller ones. Long fingers do not clasp objects harder than shorter ones. The same is true of breasts. Size is not important in terms of how much milk a mother can produce for her young, and it is not related to sex drive. Our society sometimes seems to put a value on breast size, but it really is not an issue of physiology. Designers look for models with small breasts because they feel they look better in clothes. The size of the parts of the body is an overstated concern. People of all shapes and sizes, with varying size body parts, live fruitful and happy lives."

3. Lesson Conclusion and Preview of Next Class

Conclude the period by thanking students for their willingness to put their questions down on paper and noting that their so doing provides you and other professionals interested in their healthy development with insights into the issues that are on their minds. Perhaps some ideas for

further sharing of information and reassuring of students about developmental concerns will emerge. In one class, the teacher established a Health Question Box, into which students continued to drop their questions. Every two or three weeks, in a few spare minutes at the end of a period, the teacher would pull out two or three questions and answer or discuss them. This kind of structured avenue for dialogue about health concerns provides students with the privacy and anonymity they want and need.

Activity Three

Handle with Care: Appreciating and Taking Responsibility For Your Body

Objectives

Cognitive: Students will:

- Understand that as they mature they can take more responsibility for their bodies and health.
- Be able to describe at least one way that a feature of one's physical development affects how he or she feels about himself or herself.
- Distinguish between those physical characteristics that people can work on to change if they wish, those that will change in the course of normal adolescent development, and those that essentially cannot be changed.

Affective: Students will:

- Appreciate that everyone is different.
- Become more accepting of physical flaws, real or imagined, in themselves and others.

Skills: Students will be able to:

- Demonstrate self-monitoring of a health behavior.

Activity at a Glance

Students hear a mini-lecture on body image and body care, discuss the information in the context of people who have overcome physical handicaps in a manner that inspires others. They then go through some specific examples of how people perceive themselves and how it affects them. In a second session, students deal with the idea of self-monitoring as a method to help them take responsibility for their own health and well-being. Finally, they have opportunity to brainstorm together the traits that people can and cannot readily change, look at themselves and their own body image, and consider those things about themselves they must accept, those they can expect to change naturally, and those they can choose to do something about to enhance or improve their body image.

Preparation

1. Familiarize yourself with the notes for the mini-lecture introducing the concept of body image. If you are accustomed to sharing your own feelings and experiences with students, spend a little time thinking about your own body image and self-concept as an adolescent. What helped you feel good about yourself, even if everything about your looks wasn't exactly perfect? There may be an appropriate moment in the class when you could effectively share that experience and make some students feel a lot better about themselves as a result.

2. Optional: Put quotations (pp. 42-44) on 4" x 6" cards if variation is to be used.

3. Duplicate "Fact Sheet on Eye Care in Adolescence" and "Fact Sheet on Dental Care in Adolescence," a copy of each for each student.

4. Prepare "Cans and Can'ts" chart on newsprint if you prefer to have it prepared ahead of time.

Procedure

Session One

1. Notes for Teacher Mini-Lecture

APPRECIATING AND TAKING RESPONSIBILITY
FOR YOUR NEW BODY

Many body changes take place during the adolescent years. In Activity One we noted the changes that take place in early adolescence when boys and girls reach puberty. But in addition to the development of secondary sex characteristics, other changes also take place. For one example, boys feet grow longer at the start of puberty. There is a good reason for this. Their other bone growth will last until about the age of 21, making them taller, broader in the shoulders, and heavier. If their feet stayed small, they could not hold up the growing structure that uses them as a foundation. When early foot growth takes place in boys, they are not used to the new size of their feet. They can trip over things or appear to be awkward, and they often become self-conscious. Girls' bodies change a great deal in early adolescence, too. Most girls reach their full height by the time of their first menstruation, and their hips round out to accommodate the widening pelvic area.

So, in a short space of time, a child's body turns into the body of an adult, and this new body often seems strange to its owner. Because so much seems to be changing, like the development of facial hair in boys, and underarm hair in girls, adolescents spend a good deal of time looking in the mirror, getting to know their new bodies. With all that study, it is easy to focus on perceived flaws in the body. Many adolescents wish they looked different. If they have curly hair, they wish it were straight, and vice versa. If a girl is tall she may wish she were shorter; if a boy is short, he may want to be taller. And on and on, through other body features.

Sometimes, young people become so anxious about how they look that they decide to ignore their bodies

altogether. They refuse to take notice of them, and, in so doing, can also neglect to take proper care of them. In this activity, we will be concentrating on two aspects of the body: first, body image, what we "see" about ourselves when we think about our bodies; and second, taking responsibility caring for our bodies to promote lifelong good health.

2. Class Discussion: Putting Body Image in Perspective

Ask students to think for a few moments about people they have read about, seen on television, or know who had some serious physical problem that they were able to overcome or accept in a manner that everyone respected. They may offer any number of examples, from movies like "The Other Side of the Mountain," "Ice Castles," or "The Elephant Man," or real-life stories like those of Franklin Delano Roosevelt, Patricia Neal, Helen Keller, Max Cleland, or Patrick Kennedy, or singers Jan and Dean, Stevie Wonder, or Jose Feliciano, or athletes like Wilma Rudolph or Tony Conigliaro, Jimmy Piersall, Roy Campanella, J. R. Richard, or Babe Zaharias, or perhaps another student in your school or community.

For discussion:

- What enabled these people to accept and somehow go beyond their physical handicaps?
- Have you ever known anyone whose physical defect or handicap "disappeared" in your eyes once you got to know them well?
- Talking about people like these makes most of our real or imagined physical flaws or figure faults seem pretty inconsequential by comparison. Nevertheless, how we think we look to others matters to most people. Why is one's body image important?
- Do you think teenagers are more concerned about their appearance than people at other ages?
- What aspects of health care are likely to be overlooked by teenagers?

3. Notes for Teacher Mini-Lecture

SOME STRAIGHT TALK ABOUT BODY IMAGE*

An image is a mental picture, a "photograph" that you view in your head. Think about your mental photograph of your physical self—your body image. Does it really look like you?

If a friend asked you for a picture of yourself, you would probably choose the best one you had. You would want the picture to be a good likeness, and you would want it to show your best features. But no matter how accurate it is, it is a picture, not really you. The same is true of your body image. It can be an accurate description, but it is different from your body itself.

We all have ideas and feelings about our bodies, and those ideas and feelings can change even when the body remains the same. There are many things about your body you cannot change, but you can change how you feel about it. As one girl said:

> Let's face it. I'm never going to be tall and willowy. I'm five feet one and I've pretty much stopped growing. Now I can either think of myself as short and dumpy, or I can think of myself as short and cute. So I've decided to think of myself as short and cute!

She admired tall and willowy bodies, but she had stopped growing at five feet one. That combination of values (tallness and willowiness) and fact (five feet one) posed a problem for her self-esteem. She faced the problem squarely and gave herself two choices: either to put herself down, or to value herself by seeing herself as cute though short, and neither tall nor willowy. Her decision solved the problem: She accepted her body and her self-esteem returned. Do you think this was a good choice?

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*From Accepting My Body: Physical Development in Adolescence, Family and Community Health Through Caregiving Program, Newton, MA: Education Development Center, 1981, pp. 18–20.

You've also got to be realistic. There is great value in being truthful with yourself and realizing that your body isn't necessarily suited for everything you would like to do. From a high school junior:

> I'd really like to be a professional football player--I mean, who wouldn't want all that fame and all that dough? But I'd be killed if any of those guys tackled me. I just don't have the build for football.

We can change our minds, we can accept the status quo, or, in many cases, we can change our bodies. But sometimes it is easier to change your body than your image. Another young woman observed:

> I've lost a lot of weight, and now people say I'm skinny. In fact, people who haven't known me for long can't believe that I was ever fat. But there are times when I still think of myself as fat.

The image we have of ourselves can be different from what others see. We may be hanging on to an old image while the body changes. It can be difficult sometimes to keep the internal image we have of ourselves up to date with our external appearance.

The fact is, when your body image and your body don't match, you can change one, or the other, or both. Said a college youth:

> My brothers are natural athletes. I always had to work a lot harder to do anything athletic, and even then they were always better. I sort of thought of myself as the runt of the litter. But I kept plugging away because I really enjoy sports. I warmed a lot of benches in high school! Now I'm bigger and stronger than my brothers, and there are some sports that I'm better at than they are. I'll never have their natural abilities, but now I'll always be able to enjoy playing.

He accepted his body and worked to enjoy improving it. And it paid off.

But whether you change your mind, or your body, or both, the bottom line is this: WHAT YOU THINK ABOUT

YOURSELF VERY OFTEN DETERMINES WHAT PEOPLE THINK OF YOU.

> My best friend has all kinds of things "wrong" with her. Her nose is too big, her mouth is too wide, and she's about 30 pounds overweight. But she thinks she's attractive in a dramatic way. She's not conceited, she just doesn't let those things bother her. And people do think she's a very attractive person.

Variation: Put quotations above on 4" x 6" cards and have students discuss in small groups how the person might have changed his or her mind or body and what the effects might be of such a change. Can they think of other examples?

Session Two

1. Self-Monitoring for Good Health

To frame the class discussion, make the following points:

- It is easy to focus excessively on body features that have to do with body image.
- At the same time, it is easy to overlook the body's continuing need for attention and care.
- Young children are cared for by parents, who are aware of their bodies needs, and taken to pediatricians for regular check-ups.
- Adolescents must begin to take responsibility for their own health and well-being.
- One way to accomplish this is to develop a skill called "self-monitoring." This means paying attention to all parts of the body, to assess how well they are functioning, and seeking help from experts when it is needed.
- Self-monitoring promotes good health, and it also promotes self-esteem by keeping the body in its best and most attractive condition.

After a presentation of these ideas, distribute the fact sheets "Eye Care in Adolescence" and "Dental Care in Adolescence" to students. Ask them to read each of the

sheets and answer the questions at the bottom of each sheet. Each student will work individually, and not be asked to share the information with anyone else. But ask each to complete the short questionnaire in class so that you know the task is accomplished.

Remind students that if they have any questions about other kinds of examinations and how to arrange them, they would find the school nurse a good resource.

2. Brainstorm: Cans and Can'ts

Put the chart below on the chalkboard or use a pre-prepared newsprint version. Ask students to think carefully and then suggest some things about one's physical make-up that can be changed through some personal action, and some things that cannot be. Record their responses.

Things About Their Bodies That People Can Change	Things About Their Bodies That People Can't Change

After students have generated a list in each category, ask them to check them out. (There may be some disagreement on a few characteristics: for example, can you remove freckles? change your height? change your sex?) Try to keep the lists focused on what an individual person could change or not by his or her own behavior. For example, a person can gain or lose weight by increasing physical activity or altering eating patterns, tone muscles by exercising, get curly hair via a permanent, lower resting heartbeat with biofeedback techniques, or alter mouth appearance through orthodontics, but a person cannot change eye color, skin color, or height. Some traits are alterables. Some traits, for all practical purposes, are givens.

3. Self-Assessment: Likes and Dislikes

Have students take out a piece of notebook paper, draw a line down the center, and label the two columns as follows:

Things I Like About My Body	Things I Wish Were Different About My Body
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.

This is a private exercise. The lists are not to be shared. Emphasize that the purpose is for students to clearly identify what they like and don't like about their physical makeup and thus to understand their body image at this moment in development.

After students have finished their self-assessments, ask them to:

- Draw a box (□) around all those things on both lists that cannot be changed by personal behavior on their part. (ACCEPT THESE!)
- Place a checkmark (✓) by all those things on both lists that will correct themselves in time as they grow and mature over the next few years. (BE PATIENT FOR THESE!)
- Draw a circle (○) around all those things on both lists that they could change or enhance if they worked at it or decided it was important enough to do. (CONSIDER DOING SOMETHING NOW ABOUT THESE!)

4. To Think About

- What are some of the things that you wrote on your papers that you do like about your body?

- Which might you want to project more positively to the world? For example, do you have really nice teeth? If so, you might want to smile more. If you are very well coordinated and graceful, you may want to join a dance group to perfect and demonstrate your skills. Are you unusually strong? If so, you might want to help out more in situations that call for strength. Decide for yourself what positive aspects you want to be more aware of, feel good about, and show to the world.

5. Lesson Conclusion and Assignment for Next Class

Briefly review the activities and discussion that have taken place. Emphasize that one's body image is important, because how we feel about our looks influences how we interact with others, how confident we are to try new things or meet new people, how comfortable we are with ourselves in general. But let's try to keep things in perspective, with the wisdom to accept those things we cannot change, to trust to nature to do its work in due time on some things, and to take responsibility to change those things that can be changed if changing would make us feel better about ourselves and our bodies. This last theme will be addressed in the next class period.

Ask students to look back at their circled items and before the next class select one that seems important enough to work on actively for a week. It can be something they like about their bodies and want to enhance, or something they are not satisfied with or feel is not as healthy as it might be and would like to start to improve.

FACT SHEET ON EYE/VISION CARE IN THE ADOLESCENT YEARS

1. You should have a complete professional eye/vision examination each year.

2. Symptoms to be aware of include:

- blurring
- headaches
- double vision
- losing one's place when reading, or skipping from one line to another
- needing to reread often
- not being able to see the board
- red or itchy eyes

Some of these problems may require referral to other professionals, such as educators, in addition to your eye/vision care specialist.

3. The two most common eye/vision conditions in adolescence are nearsightedness and vision performance problems. Nearsightedness (or myopia) is a condition in which the eyes can see close-up things well but have trouble seeing distant objects clearly. Vision performance problems refer to a variety of problems the eyes may have in the ways they work. Vision performance problems include trouble focusing, a lack of smooth eye movements, and an inability of the eyes to work together as a team. Any one of these vision performance problems may interfere with learning.

4. On the other hand, if close-up objects, like words in a book or on a computer screen, are blurry you may be farsighted (or have hyperopia) and should have your eyes checked.

5. Everyone should wear safety goggles in shop classes, in sports activities, or in other situations when injury to the eye is possible, or when foreign objects might get in the eyes.

6. There are many kinds of eye/vision problems and different ways to correct them. A professional eye/vision care specialist can suggest whether glasses, contact lenses, low vision aids, vision therapy, or other treatments can be helpful.

EYE/VISION CARE CHECKLIST

1. Your eyes were last examined over a year ago? Yes ___ No ___

2. Do you have any trouble with:

- Blurred vision? Yes ___ No ___
- Frequent headaches? Yes ___ No ___
- Double vision? Yes ___ No ___
- Losing your place while reading? Yes ___ No ___
- Not being able to see the board? Yes ___ No ___
- Seeing things at a distance? Yes ___ No ___
- Seeing things close up? Yes ___ No ___
- Red or itchy eyes? Yes ___ No ___

If the answer to any of these questions is "yes," you will want to take this sheet home and share it with your parents. If you have not had your eyes examined in the last year, ask your parents if you can arrange for an eye/vision examination.

Recommendations of the American Optometric Association

FACT SHEET ON DENTAL CARE IN THE ADOLESCENT YEARS

1. Both dental caries (tooth decay) and periodontal (gum) disease are caused by dental plaque (a thin film of bacteria that forms on the teeth).

2. To prevent dental disease, you should:

- Brush and floss your teeth daily, to remove plaque.
- Use fluorides.
- Eat a balanced diet and limit snacks.
- See your dentist regularly.

3. Teeth that are crooked or do not fit together properly may need orthodontic treatment. Orthodontics is a special kind of dentistry that uses braces and other devices to move the teeth into better positions. The age at which treatment should be started depends on the problem.

4. To prevent injury to the teeth and mouth during sports activities, all athletes should wear mouthguards.

5. Using tobacco in any form--cigarettes, cigars, pipe tobacco, snuff, or chewing tobacco--can harm the oral tissues.

DENTAL CARE CHECKLIST

1. Have you seen a dentist within the last year? Yes ____ No ____

2. Do you have:

- Broken or chipped teeth? Yes ____ No ____
- Discolored teeth? Yes ____ No ____
- Teeth that are painful? Yes ____ No ____
- Bleeding gums? Yes ____ No ____
- Teeth that are crooked? Yes ____ No ____
- Sore spots or white patches in your mouth? Yes ____ No ____
- Swellings or lumps in your mouth? Yes ____ No ____

If the answer to any of these questions is "yes," you will want to take this sheet home and share it with your parents. If you have <u>not</u> seen a dentist within the last year, ask your parents if you can make an appointment.

Recommendations of the American Dental Association

Activity Four

Self-Monitoring for Good Health

Objectives

Affective: Students will:

- Feel able to do something that actively promotes a healthier body, better body image, and a more positive self-concept.
- Want to manage their lives to improve their physical, mental, emotional, and social health.

Skills: Students will improve their ability to:

- Set short-range goals for personal health improvement that could become part of a long-range effort.
- Select and schedule specific behaviors and strategies for accomplishing their goals.
- Assess their progress toward goals they have set for themselves and reward themselves for accomplishments.
- Plan long-range goals for assuming responsibility for their health.

Activity at a Glance

After selecting one physical characteristic from his or her list of "Likes and Dislikes," each student, working independently or with a friend, designs a one-week effort to maintain, enhance, or begin to change one aspect of his or her body image.

Preparation

1. Duplicate "My H.I.P. Sheet" and "My H.I.P. Report," a copy of both for each student.

2. You may want to select one physical characteristic that you would be willing to work on for a week and share your plan with your students as a motivator.

Procedure

1. Introduction to the Health Improvement Plan

How we think we look is important because it affects our self-confidence and sense of acceptance among those people who are important to us. How we look is also directly correlated to our health practices: what we eat, how much we exercise, whether or not we bathe or brush, shave or pluck, drink or smoke. All these practices affect how healthy we are, how vital we look, and how we feel about ourselves.

Set a comfortable and relaxed tone in the classroom that legitimizes taking the exercise seriously. The students' task is to decide on some aspect of their bodies--strength, firmness, size, shape, smell--that they would like to devote a week of effort to. Remind them that a week will not bring about miracles, but they may be surprised at the difference some concentrated attention can make. To feel better about themselves is the real goal--that and the recognition that what they do or don't do counts when it comes to enhancing health and a sense of well-being.

Pass out the two planning sheets, and explain that today's class is the planning-working session. By the end of the period, you want to be assured by each student that he or she has a plan. (If a student wants to keep his or her plan private, that's fine, but he or she must find some way to let you know that the effort to do something is being made.)

Give students about 10 minutes to work on the sheets individually. The purpose in this individual thinking time is for each student to review his or her "Likes and Dislikes" sheet from the last class, and choose one of the circled items to work on. During this time and throughout the period, you should move around the classroom, talking quietly with any student who seems to need support or

encouragement, answering questions from individuals about this or that, but generally urging them to make up their own minds. Caution students not to be too grandiose in their plans. A small but significant step will be just fine.

After the 10 minutes of individual thought and decision, allow students to work with a friend or work independently, as they prefer. You can continue to circulate and give individual assistance.

A buddy or helper system works well for many students on a task of this type. They can work as a team, helping each other think of ways to address the issue, supporting one another as the week progresses, and checking in with one another at the end to talk about how it went and how the whole effort turned out.

The following are some examples of student Health Improvement Plans.

Ronnie: I just had a checkup by the dentist last week. I had eight cavities! Not like the TV commercials. He told me all this stuff about brushing and flossing. I've usually been pretty good about brushing most every day, but I've never used that floss. My Plan will be to try to brush after eating and try to get the hang of flossing daily. I'll also cut down on sweet, sticky foods.

Sarah: I know I'm twenty pounds overweight. I really want to lose. I'm not sure quite how to go about it so I'm going to make my Plan for the week to find out how I could change my eating habits and/or increase my daily activity and still do everything I have to do. I think I'll see what information the school nurse has on diet planning and talk to my PE teacher about exercise that would be good for me. Then by the end of the week, I'll decide for real. I need to psych myself up for this mammoth effort.

Randy: I'm tall enough, but one word I can't stand is "lanky," because that's what I am. My upper arms are like toothpicks. Now I know all that stuff about being patient because I'll probably be filling out in about three yers, but THREE YEARS LIKE THIS? Forget it! I know I'll never be built like Muhammad Ali, but maybe a little substance in the arms? I'm going to check with the coach and start a weight-lifting program for a few minutes before and after school. That's my Plan.

Bill: I've been smoking since I was 12. It made me feel so cool back then. I just liked holding a smoke in those days. But, my grandfather died a couple of months ago from lung cancer. Not cool. I'd really like to quit now, but it'll be hard. All the kids sort of expect me to always have a pack. But I'm going to give it a try for a week. Quitting would surely change my image, if not my body! This is as good an excuse as any.

2. Conclusion and Preview of Next Session

By the end of the period, be sure you have had a few words with every student and have them sign all H.I.P. Sheets in the lower righthand corner. Let them know you are their Number One Supporter. Help them be realistic and wise in their choices. Acknowledge that working on the body takes determination, commitment, and belief in your power to control at least some aspects of your life, health, and looks. Remind them not to expect miracles in a week--but, to view it as "the first week of the rest of my life," a time to really make some progress toward a goal that is important enough to them to want to continue beyond the one week of this activity. (You may wish to extend this assignment by scheduling periodic H.I.P. check-ins over the semester or school year.)

Pass out copies of "My H.I.P. Report" and set the due date. Let students know that these reports will be kept confidential unless they wish them to be shared with the class. Tell them that you are eager to see how well their plans work in order to help other students think about effective ways to improve their health and sense of well-being when they want to.

(Make a mental note to give individual students a positive word or make a supportive inquiry about their progress as you happen to see them during the week in the hall or cafeteria, on the playing field, at the bus stop. These out-of-class contacts send the message that your concern for their health improvement success goes beyond your classroom.)

Announce that the class will focus on another aspect of development at adolescence: the development of thinking. Are they aware that cognitive psychologists have noted a "puberty of the mind" as well as the body in adolescence? Assignment: Bring your brains to class tomorrow!

MY H.I.P.* SHEET

In taking responsibility for my own health, I have decided to work on this particular health issue: _____.

My ultimate goals is: _____.

In one week, I can realistically expect to accomplish the following: _____

_____.

Things I will try to do each day for a week to reach my objective:

Day 1: _____

Day 2: _____

Day 3: _____

Day 4: _____

Day 5: _____

Day 6: _____

Day 7: _____

SIGNED _____

If this works and I reach my goal, I am going to reward myself by _____

_____

_____

Signatures of My Supporters:

_____
(Friend)

_____
(Parent)

_____
(Teacher)

*H.I.P. (Health Improvement Plan)

DUE DATE _____

MY H.I.P.* REPORT

What I did, how it worked out, what I learned about myself and my body:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

There are some health issues that I will take more responsibility for in the next year:

1. _____

_____

2. _____

_____

3. _____

_____ _____

SIGNED _____

*H.I.P. (Health Improvment Plan)

Activity Five

The Development of Thinking Abilities in Adolescence

Objectives

Cognitive: Students will be able to:

- Describe some characteristics of children's thought processes.
- Describe some of the qualities of adolescent thought.
- Understand that they think differently now from the way they did when they were younger.

Affective: Students will:

- Value the differences in the way people think as they mature.
- Appreciate the expanding capacities of their minds.

Skills: Students will be able to:

- Compare their own thinking with that of younger children.

Activity at a Glance

Students have an opportunity to think about thinking by observing their emerging capacity to think abstractly and to handle sophisticated concepts. They compare their own

thought processes with those of young children in order to discover some of the special characteristics of thinking that develop as one matures.

Preparation

1. Preview the entire activity and the experiment sheets entitled "How Young Children Think," to be distributed as homework at the end of Activity One. There are two ways to accomplish the goals of the activity. The best way is to have students spend 10 or 15 minutes interviewing four-, five-, or six-year-old children, using the experiment sheets. Ideally, students can talk with a younger brother or sister, a cousin, or a niece or nephew. Alternatively, individual students can work with children in a preschool program at the school or ask a neighbor if they might talk to his or her child for an assignment at school about how young children think and solve problems.

If either time or access to young children is a problem for your students, you may prefer to conduct the experiments yourself by taping interviews with several children, using all four experiments. Alternatively, you can simply bring materials to class to demonstrate the ways in which children typically respond or use the blackboard to illustrate the experiments.

2. To prepare for the activity, familiarize yourself with "Development of Thinking in Adolescence" (below) to prepare the lesson, and read the descriptions of young children's typical responses to the experiment situations (listed in the group presentation section). You may also want to read a general introduction to cognitive development and specifically to the work of Jean Piaget, who originated these experiments. Two helpful introductions are:

Rohwer, W. D., Ammon, P. R., and Cramer, P. Understanding Intellectual Development. Hinsdale, Illinois: The Dryden Press, 1974 (paperback).

Flavell, J. H. Cognitive Development. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1977 (paperback).

3. Be sure students have completed the "How Young Children Think" experiments sheets distributed in Activity One so they are ready for this activity, or, if you will be presenting the material, have them they bring their forms to class.

4. Have on hand the materials called for in the experiment (checkers, glass or plastic containers, etc.) to use for demonstrations.

5. If you have taped the experiments, have a tape recorder available.

6. Determine whether to allow for one or two sessions. If students are conducting and presenting interviews with young children, we recommend doing two sessions. If you are making a presentation, one session may provide enough time.

DEVELOPMENT OF THINKING IN ADOLESCENCE

Adolescence is accompanied by impressive changes in cognitive skills. In fact, one researcher claims that the major task of early adolescence is "the conquest of thought."* Adolescents are able to process information much more efficiently, and to keep track of far more information than they could when they were younger. More important, the nature of the adolescent's thinking is strikingly different from that of an earlier age. A well-known psychologist specializing in adolescence describes the change this way:

> The gains that occur during this period are both quantitative and qualitative: quantitative in the sense tht the adolescent becomes capable of accomplishing more easily, more quickly, and more efficiently intellectual tasks that as a child or preadolescent he or she was able to accomplish only slowly, inefficiently, and with great difficulty, if at all; qualitative in the sense that significant changes also occur in the nature of the adolescent's mental processes, in the ways in which he or she is able to define problems and to reason about them. If it were not for these quantitative and qualitative gains in cognitive capability, adolescents would be incapable of confronting and dealing successfully with many of the important demands made upon them during this period.**

*David Elkind, "Egocentrism in Adolescence," Child Development, 1967, Vol. 38, pp. 1025-1034.

**John Janeway Conger, Adolescence and Youth: Psychological Development in a Changing World (New York: Harper & Row Publishers, 1977), p. 140.

The adolescent starts thinking about problems in entirely new ways. Progress in cognitive growth is uneven, however: individual adolescents vary a great deal in their cognitive abilities and even a single adolescent can display highly complex thinking abilities in one area (e.g., math) and less developed capacities in another (e.g., language). By the end of adolescence, many adolescents will be capable of what Piaget calls "formal operational thought"--the ability to think abstractly, to theorize, to speculate about events and concepts, to move beyond the here and now. Most adolescents will be more capable of thinking in probabilistic terms, formulating and testing hypotheses, and knowing how to use evidence to back up their assertions. Most important, adolescents, in contrast to young children, will not be dependent on their perceptions alone to understand the situations around them. Even though a line of checkers spread out will look longer than the same number of checkers grouped together, the adolescent has the ability to "conserve," i.e., to hold in his or her mind the concept of equal numbers--independent of how the checkers look.

The fact that adolescents are no longer confined to <u>one</u> view of the world also means that they become able to generate alternatives and consider multiple perspectives--not just their own. They recognize that not all people think alike, and are curious about the differences between their own perceptions and those of others. The activities in this session are built upon the notion that adolescents are becoming capable of expanded forms of thinking, and that they will enjoy exploring differences between their own thinking processes and those of younger children.

Procedure

1. <u>Group Presentation</u>

Divide the class into four groups, one for each experiment. If students have conducted the experiments, they will describe their results to each other. If you are presenting the materials, these same groups will take primary responsibility for understanding how the young children responded and for figuring out their own thinking processes for the assigned experiments.

Give each group five minutes to discuss the results of the experiment and to prepare to present them to the class. (If you are presenting, take 10 to 15 minutes to review each situation with the materials you have brought or through drawings on the board.)

For now, do not proceed beyond simply describing how most of the young children responded to each situation. If the experiments have been carried out faithfully with four-, five-, and six-year-olds, the typical results will be:

Experiment One: Young children will tend to say there are more checkers in the longer line, even though they count seven checkers in each.

Experiment Two: Young children will tend to say there is less water in the lower, wider container and more water in the taller, thinner container than in the same-size containers. In general, they will use height of the water level as the basis for their reasoning.

Experiment Three: Young children will usually place the animal facing in the same direction as it is at the starting line--even though, when they actually move the animal around the track from start to finish, the animal will be facing in the opposite direction.

Experiment Four: Young children will usually say that they have two brothers or sisters, but that their brother or sister has one (namely them).

2. Adolescent Thinking

After the responses of young children to all of the situations have been described, ask each group to:

- Agree upon how they would respond to the interview questions. (You can have them actually fill out extra experiment sheets or just take notes of their discussion.)

- Describe all the different ways they could demonstrate or prove the accuracy of their response. For example, the group working on Experiment One will probably agree that the number of checkers in each line remains the same no matter how the checkers are configured. To prove the case, they might: show some simple mathematical examples using the number 7 in two cases to illustrate its consistency ($7 = 0 = 7$, $7 - 0 + 7$). They might suggest weighing the checkers on a scale, or they might measure each individual checkers with a ruler (independent of the space in between). The total weight or measurement of both groups could then be shown to be the same.

(Note: If you plan to teach the activity over two class sessions this would be a good place to break.)

3. Brainstorming

After each group reports, have the class list as many of the underlying thinking processes they have used to come up with their solutions to the experiments. Ask:

- Looking back on the solutions you suggested, what processes or methods did you use to solve them?

- What were you able to do that the younger children didn't or perhaps couldn't do to arrive at your solutions?

You may have to help students reach an appropriate level of generality. For example, if a student says, "We were able to measure the diamaters of the checkers to prove there was still an equal number," you can say "Okay, you have the use of complex thinking--an understanding of mathematical concepts."

By the time the brainstorming ends, you should have included the following general capacities that adolescents can bring to their solution of problems: logic; the creation of a hypothetical case; the use of probabilities; abstract thinking; consistency; the ability ot think about more than one component of a problem at the same time (e.g., height and volume); the ability to take the perspective of another (i.e., to see things the way someone else might see them--an animal, your brother or sister).

4. Teacher Summary and Guided Discussion

Summarize by reviewing the qualities of adolescent thought that students have discovered. In contrast, explain further why the younger children responded as they did. Experiments One and Two graphically illustrate the limits of a young child's ability to think beyond what he or she perceives or sees. The young child is also unable to hold more than one aspect of dimension of a problem at a time: the child cannot coordinate height and volume in Experiment Two, for example.

Young children are also limited in their capacity to take the point of view of another. They think the horse will face the way it is facing when it starts out because that is the way they see it now. While they can actually move the animal around the track, they cannot travel around the track with the animal (in their minds) to know that when it gets halfway around it will be facing in the opposite direction.

In order for them to see that they would have to move the horse around the track or literally get up themselves and go to the other side.

Reinforce the point that the mind as well as the body is continually growing and changing and, as students have seen, adolescents have the abilities to think about things in ways that children do not yet have at their command. Specifically, review the differences and similarities between the thinking processes of adolescents and young children by reinforcing the following points. As you review these points, ask students to provide specific examples from the interviews with young children and from their own solutions to the problems.

(1) Adolescents think more consistently than younger children. Younger children aren't bothered as much by inconsistencies or contradictions in their answers, because they don't recognize inconsistencies.

(2) Adolescents think more logically than younger children. Younger children don't understand that there are certain "rules" to the way we think. For example, they might answer a question with "just because it is" and find this a perfectly logical explanation!

(3) Younger children usually think only about one aspect of a problem. Adolescents can focus on on many different aspects.

(4) Adolescents are able to speculate and think hypothetically about events that may never happen. Younger children often get confused when they are asked to do this.

(5) Younger children tend to see events very personally. For example, the young child thinks of both his or her brothers and sisters, but does not understand that the brothers or sisters also think of both siblings.

(6) Some people feel that young children are more creative thinkers than older people. This is because children often weave "stories" together without regard to the facts. Facts and fantasy often get confused for young children, while adolescents can separate them.

(7) There are many common characteristics of adolescent's thinking and children's thinking. Both groups make use of their own perceptions and any information that is available to them to answer a question.

(8) There are differences within an age group, as well as differences between age groups. Whatever their age, no two people think about complex problems in exactly the same way.

Be sure to leave time for questions, reactions, and discussion. For many students, an understanding of the development of their thinking abilities in contrast to the abilities of young children will be startling and they will want time to talk and ask questions about what they have just experienced.

If there is time, ask students to consider the implications of their new thinking capabilities for what they can do now that they could not do before. For example, they can now think more effectively about the future and make plans--weighing and balancing several options. They can now come up with numerous alternatives for a situation--making the decisions they face more complex, but giving them potentially more ways to solving problems. What are the advantages of being able to see things the way someone else does? Does this or any other new thinking ability have limitations as well as strengths (i.e., if you can understand another's point of view, it may be more difficult to forge ahead with your own plans).

HOW YOUNG CHILDREN THINK

Directions: Choose one or more of the following experiments to present to a four-, five-, or six-year-old. In each case, follow the directions carefully, using the specific questions provided for each experiment. Record the child's responses as accurately as possible. Important: Most children of these ages will not solve these problems in the same ways you would. It is important that you do not criticize their solutions or judge them as right or wrong. Simply write what is said and encourage the child to share his or her reasons for the response. What the children tell you will help you to understand how they are seeing the world.

Experiment One

For this experiment you will need seven red and seven black checkers. Begin by laying the seven black checkers in a line on the floor or on a table. Then place the seven red checkers directly beneath them so that you have two parallel lines:

O O O O O O O (seven black checkers)

O O O O O O O (seven red checkers)

Ask the child these questions in exactly these words:

1. How many black checkers are there?

   (Answer: ____ black checkers)

2. How many red checkers are there?

   (Answer: ____ red checkers)

3. Are there more black checkers or red checkers?

   (Answer: ____ more black checkers ____ more red checkers)

After recording the answers, spread the seven black checkers out a greater distance apart so they are in a long line, but still directly above the seven red checkers that are closer together:

O O O O O O O (seven black checkers)
O O O O O O O (seven red checkers)

Ask:

4. How many black checkers are there?

(Answer: ____ black checkers)

5. How many red checkers are there?

(Answer: ____ red checkers)

6. Are there more black checkers or red checkers?

(Answer: ____ more black checkers ____ more red checkers)

If the child thinks there are still the same number of checkers, thank the child for his or her help and end the interview or go on to the next experiment. If the child says there are more of one color than the other, ask:

7. Can you tell me why you think there are more red (or black) checkers than black (or red) ones?

(Answer: _____

_____)

Continue to ask the child to explain until you understand how he or she is thinking about the problem, and you feel you can explain why the child is giving the response.

End the experiment by putting the black checkers back in their original position so that the two lines are even again:

O O O O O O O (seven black checkers)

O O O O O O O (seven red checkers)

Ask:

How many black checkers are there?

(Answer: ____ black checkers)

How many red checkers are there?

(Answer: ____ red checkers)

Are there more black checkers or red checkers?

(Answer: ____ more black checkers ____ more red checkers)

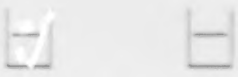
Be sure to thank the child for helping you with your homework.

Experiment Two

For this experiment you will need four clear, glass or plastic containers: two clear glass or plastic containers the same size and shape (water glasses or jam jars would do well), one clear glass or plastic container that is wider and shallower than the first two, and one clear glass or plastic container that is taller and thinner than the two same-size jars:

same-size containers wide, shallow container thin, tall container

Begin by pouring equal amounts of water (or a colored liquid such as water with several drops of food coloring added) into the two same-size containers. Be careful not to describe the containers to the child in any way that might influence his or her thinking. Simply number the containers 1, 2, 3, and 4 for easy reference.



same-size containers

Ask:

1. Does container 1 and 2 have the same amount of water?

   (Answer: ____ Yes ____ No)

Allow the child plenty of time to compare the containers. If he or she wants to adjust the amount of water to be absolutely sure that each container has the same amount, that's fine. Then, pour the liquid from one (1 or 2) of the same-size containers into the wide, shallow container (3):

Ask:

2. Do both containers (1 or 2, and 3) have the same amount of water, or do you think one has more?

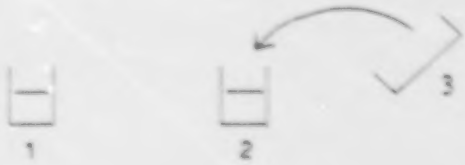
(Answer: ____ same amount of water ____ one has more)

Ask the child to explain the answer so that you are clear why he or she thinks the amounts of water are still the same or are now different.

(Answer: _____

_____)

Pour the water back into the container it originally came from.



Ask:

3. Do both containers have the same amount of water, or do you think one has more?

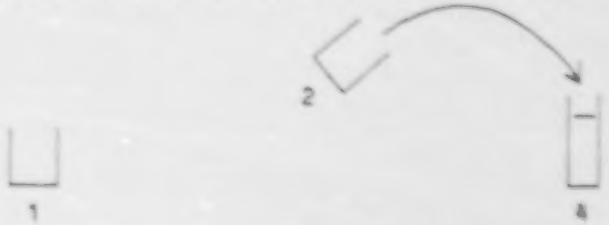
(Answer: ____ same amount of water ____ one has more)

4. Can you tell me why you think that?

(Answer: _____

_____)

Now introduce the thin, tall container (4) and pour the contents from one of the same-size containers (1 or 2) into the thin, tall container (4).



Ask:

5. Do both containers have the same amount of water, or do you think one has more?

(Answer: ____ same amount of water ____ one has more)

Ask the child to explain the answer so that you clearly understand his or her reasoning.

(Answer: _____

_____)

Finally, pour the water back into its original container.

End the experiment by asking:

6. Do both containers have the same amount of water, or do you think one has more?

(Answer: ____ same amount of water ____ one has more)

7. Can you tell me why you think that?

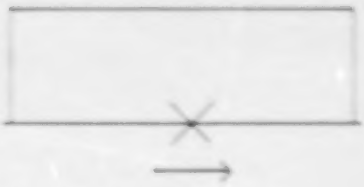
(Answer: _____

_____)

When you are sure you understand the child's reasoning, thank the child for helping and end the interview or go on to another experiment.

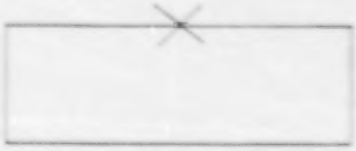
Experiment Three

For this experiment you will need a piece of unlined paper, a pen or pencil, and a plastic or rubber miniature of a horse or other animal. With the child looking on, draw a large rectangle on the paper and explain that it is a racetrack or running path. Put a large X in the middle of the lower part of the track and draw an arrow under the X to indicate which way the animal will be running. Place the plastic animal on the X, pointing it in the proper direction for the race.



Ask:

1. Can you lift the horse up and put the horse on the track the way it will look when it gets to the other side? (Place a big X in the middle of the top line of the rectangle to show where you mean):



Be sure to ask the child why he or she thinks the animal will look the way he or she has put it at the point on the track that you have marked. Record the response.

(Response: _____

_____)

Next, ask the child to put the horse back at the starting position and move it around the track so it will race from start to finish.

When the horse is back at the starting point, repeat: Now, can you lift the horse up and put it on the track the way it will look when it gets to the other side? (Point again to the big X in the middle of the top line of the rectangle to show where you mean.)

Be sure you ask the child why he or she thinks the animal will look the way he or she has put it at the point on the track you have marked.

(Response: _____

_____)

When you are sure you understand the child's reasoning, thank the child for helping and end the interview or go on to another experiment.

Experiment Four

You will not need anything special for this experiment. Begin by telling the child that you are going to pretend that he or she has two brothers, Thomas and William.

Ask:

1. How many brothers do you have?

(Answer: ____ brothers)

Ask the child to explain how he or she has come to whatever conclusion is given.

(Answer: _____

_____)

2. How many brothers does Thomas have?

(Answer: ____ brothers)

Ask the child to explain how he or she has come to whatever conclusion is given.

(Answer: _____

_____)

Go on to pretend the child has two sisters, Jill and Katie.

Ask:

3. How many sisters do you have?

(Answer: ____ sisters)

Ask the child to explain how he or she has come to whatever conclusion is given.

(Answer: _____

_____)

4. How many sisters does Jill have?

(Answer: ____ sisters)

Ask the child to explain how he or she has come to whatever conclusion is given.

(Answer: _____

_____)

After each question, ask the child to explain how he or she has come to whatever conclusion is given.

When you are sure you understand the child's reasoning, thank the child for helping and end the interview or go on to another experiment.

Activity Six

What Does It Mean to Grow Up?: The Developmental Tasks of Adolescence

Objectives

Cognitive: Students will be able to:

- Briefly describe the nine developmental tasks of adolescence.

Affective: Students will:

- Indicate an increased appreciation for their growth and development to this point in life.

Skills: Students will improve their ability to:

- Assess where they think they are now on each of the developmental tasks of adolescence.

Activity at a Glance

Students will be introduced to the concept of developmental tasks (Havighurst, Erickson, Thornburg) and consider on their own terms how they are doing in comparison to the normal ranges for each one. A self-inventory checklist allows them to record where they think they are now, and a worksheet encourages some envisioning of themselves five

years hence. Emphasis is on summarizing the nature of all aspects of healthy growth and development in adolescence: physical, mental, emotional, and social.

Preparation

1. Familiarize yourself with the entire lesson.

2. Duplicate "Knowing Myself" and "Developmental Tasks of Adolescence," one of each for each student.

Procedure

1. Introduction: "Knowing Myself" Inventory

Growth and development occurs in adolescence in four ways: physically, mentally, emotionally, and socially. We have so far looked at physical, mental, and, incidentally, emotional development in this module. (There is more on emotional development in the modules in the series: Living with Feelings, Handling Stress, and Having Friends.) This lesson focuses on social development.

To start consideration of what it means to mature socially in our society, ask students to fill out the following self-assessment inventory, "Knowing Myself." It is designed to give them an opportunity to think about where they stand on several behaviors and characteristics that have to do with living and relating to others. Make it clear that the inventory is not a test. It is another private exercise that can help students know themselves and their developmental place at the moment.

After all students have had a chance to fill out the sheet, spend two or three minutes asking for their comments or observations on the instrument and the items. Are there any items that most students consider "not at all true of me"? Any that most students consider to be "always true of me"? It is anticipated that there will be wide variations, although some may be less true of your students as a group than others. In any event, assure students that whatever they are on the scale is fine for now, but that each of these items represents an aspect of their development toward fully independent and healthy adulthood.

2. Notes for Teacher Mini-Lecture and Discussion

(Note that this mini-lecture takes a slightly different form from the ones in previous activities, in that it is designed to include student responses and discussion.)

WHAT DOES IT MEAN TO GROW UP?

By now, you have no doubt discovered that growing up physically and becoming sexually mature is not all there is to growing up. Being able to think about things in more sophisticated ways is fun and useful, but that's not all of it, either. More responsibility? That's part of it. More independence from family? Yes. More caring behaviors directed at parents, siblings, friends, and others? Yes, these too are signs of your growth and development. In fact, consider some of the following examples of shifting roles and behaviors in your family that are evidence of your growing up.

LESS being taken care of (your meals prepared, laundry done, being driven where you want to go, always getting spending money from parents, etc.) and MORE taking care of other family members as well as yourself (remembering Mom's birthday, taking Dad's coat to the cleaners, getting a job, etc.).

LESS being told to help around the house ("For the last time, clean your room, and I'm tired of telling you!") and MORE voluntarily offering to contribute to the family's functioning ("I'll have supper ready when you get home, Mom.").

LESS either unquestioningly accepting or categorically rejecting your parents' values and MORE finding your own reasons for holding certain values, beliefs, and life goals.

Can you think of any more examples of behaviors that let you know that you are becoming more and more mature with every passing day?

(Solicit student examples.)

Psychologists and sociologists have studied the phenomenon of adolescence for many years, and it is generally agreed that there are certain general developmental tasks that teenagers must accomplish to achieve adult status in the eyes of the larger community. They are cultural expectations that most people accept as the definition of being "grown up."

Let's take a look at the way two scholars define the tasks.

3. Developmental Tasks: Class Discussion

Distribute "Developmental Tasks of Adolescence." Give students a few minutes to look at it, and ask if anyone wants a fuller explanation or clarification of any of the tasks. Then ask students for their comments on the age ranges.

- Do the age ranges seem on target for the tasks cited? What about the fact that people these days are still preparing for a career long after they are 22 (average age of college or post-high-school technical training)? These are ages at which each task is generally resolved to a point of independent functioning in society in a responsible manner.

- Are you there yet? Grown up? Look back at your "Knowing Myself" inventories. How do those items compare with these tasks? Which ones do you think are the most difficult for teens your age to achieve in this particular social time? Which of the tasks have a health component--physical, mental, emotional, or social?

Developmental Tasks Related to "Knowing Myself" Inventory

Task:	Question:
1	9, 2
2	5, 11
3	7, 14
4	16, 12
5	15, 6
6	13, 3
7	17, 10
8	18, 4
9	1, 8

4. Lesson and Module Conclusion

Review again the nine developmental tasks and urge students to keep the charts and pull them out every once in a while to take stock of how they are progressing. Remind them again that being healthy means understanding physical growth and development, sexual and reproductive capability and resulting responsibility, mental abilities, emotional stability, and social connectedness to family, friends, and community.

Conclude with a statement like the following: As all these threads are intertwined in daily living and decision making through these important years, the adult you begins to emerge. You're well on your way! Here's to your healthy growth and development!

Optional

As a part of the concluding activity, ask students to write briefly about the most interesting things they learned in studying the module.

If you would like students to consider some issues in regard to their futures, you might follow this activity with some activities from the THTM module Planning a Healthy Future.

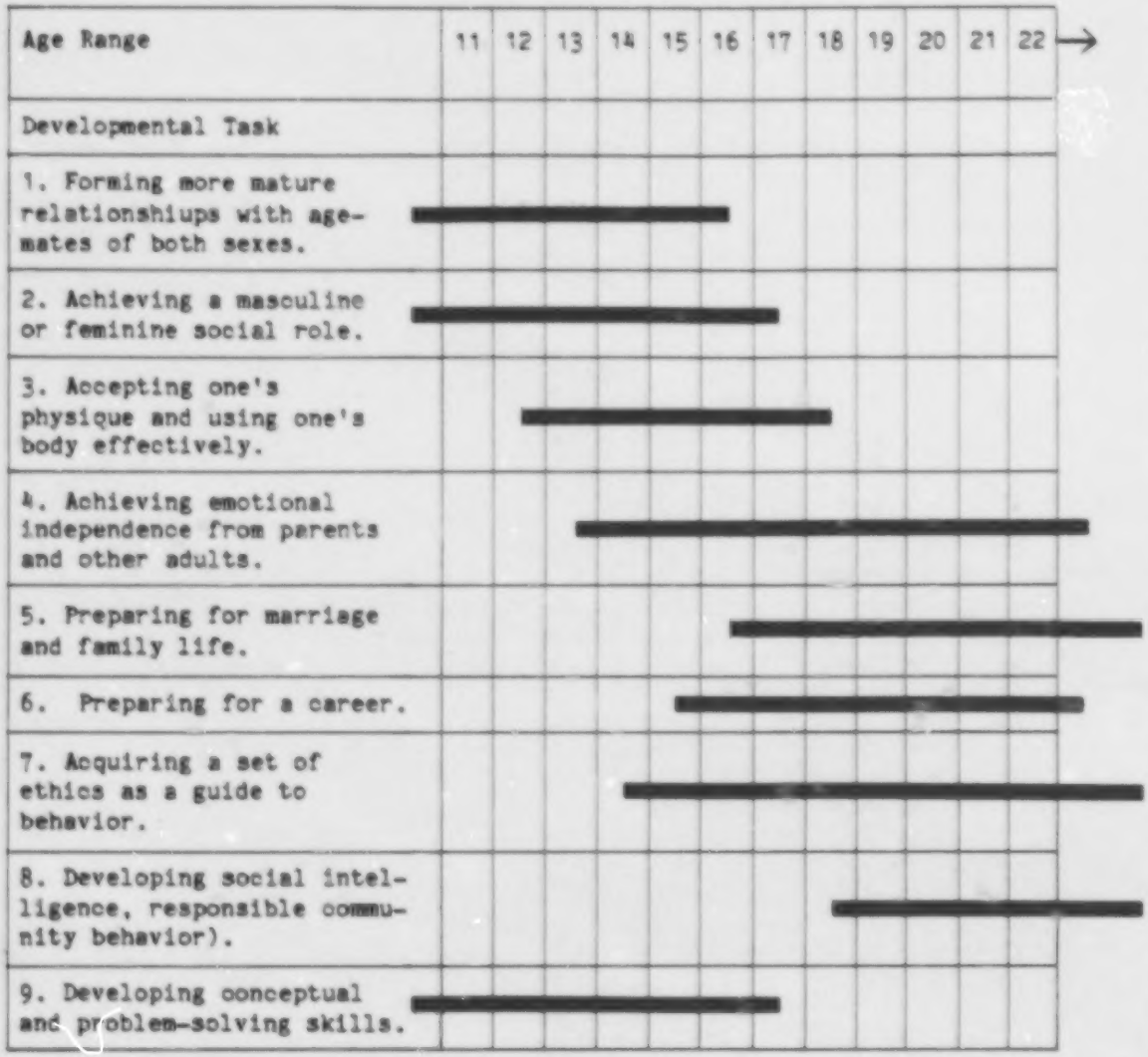
KNOWING MYSELF

Think of yourself, as you are now; not as you wish you were or will be but as you are today. Read each statement and mark the scale to show where you think you are. This is not a test. It is designed to let you take a look at you.

	not at all true of me	occasionally true of me	true of me	most of the time true of me	always true of me
1. I spend time thinking of ways to solve problems.					
2. My friends and I talk about things that are important to us.					
3. I know of several jobs I would be good at as an adult.					
4. I plan to belong to civic groups when I get older.					
5. I think of what kind of man/woman I want to be as an adult.					
6. I think about what marriage would mean to me.					
7. I know the limits of my body in flexibility, strength, and endurance.					
8. I think I understand the ideas behind what people do and say.					
9. I have male and female friends now.					
10. I act in a way that show other people what I believe to be important.					
11. I look at certain adults who are my sex and imagine what I would be like if I were in their place.					
12. I do things alone or with friends that I used to do with my family.					
13. I know of several careers I would enjoy having as an adult.					

	not at all true of me	occasionally true of me	true of me	most of the time true of me	always true of me
14. I do things to promote the healthy growth of my body.					
15. I have an image of what my own family life will be like.					
16. I understand the change in "house rules" my parents expect me to follow.					
17. I could list four major beliefs I live by.					
18. I think about the world problems we hear about on television or radio or read about in newspapers.					

DEVELOPMENTAL TASKS OF ADOLESCENCE



Robert Havighurst's developmental tasks and the age range at which they are generally resolved as related in Herschel D. Thornburg, Development in Adolescence (Monterey, CA: Brooks/Cole Publishing Co., 1975), p. 8.

Other Programs and Resource Materials

The following list of programs, materials, and other resources is by no means definitive or exhaustive. Time and resources have not made it possible to identify, obtain, and review every resource, and new ones are continually being developed. It is hoped that this list will be updated periodically, and ways will be developed to inform module users of the new listings.

In addition, official state and local health and education organizations frequently can provide help and resource assistance. Finally, other inquiries may be directed to School Programs and Special Projects, Division of Health Education, Center for Health Promotion and Education, Centers for Disease Control, Public Health Service, Department of Health and Human Services, 1600 Clifton Road, Atlanta, GA 30333, (404) 329-2829 or FTS 236-2829.

ADDITIONAL INFORMATION FOR TEACHERS

Resource List: Family Life Education Program. Albany: Educational Programs and Studies Information Service, New York State Library, 1981.

Thornburg, Hersel D. Development in Adolescence. Monterey, CA: Brooks/Cole, 1975.

Westlake, Helen Gum. Relationships: A Study in Human Behavior. Lexington, MA: Ginn & Company, 1972.

CURRICULA

An Option to SEE: Educator's Resource Guide. (1977)

A resource compendium including spirit masters to be used in grades 7 through 12 to promote eye safety and health.

Available from: National Society for the
Prevention of Blindness
79 Madison Avenue
New York, NY 10016

Cooperman, Carolyn, and Rhodes, Chuck. New Methods for Puberty Education: Grades 4-9. (1983)

A manual written for eduators who are interested in helping early adolescents adjust to the body changes that occur during puberty in order to increase knowledge about the human body, increase skills in communicating about the human body, enhance self-esteem, and increase understanding of sex differences and similarities.

Available from: Planned Parenthood of Northwest New Jersey
195 Speedwell Avenue
Morristown, NJ 07960
201-539-5838

Dental Health Education Curriculum: Oral Health and Disease. (Not Dated)

A teacher guide at the middle school level designed to assist teachers in helping students explore the prevention and treatment of various dental diseases, injuries, and related problems.

Available from: Florida Preventive Dentistry Foundation
Florida Dental Association
3021 Swann Avenue
Tampa, FL 33609

Dental Health Education Curriculum: Preventive Dentistry. (Not Dated)

A teacher guide at the middle school level designed to help the teacher give students a basic understanding of personal oral hygiene, the role of the dental team in prevention, and the benefits of fluoride.

Available from: Florida Preventive Dentistry Foundation
Florida Dental Association
3021 Swann Avenue
Tampa, FL 33609

Design For Health. (1980)

An activity-centered health curriculum for junior high school students focusing on fitness, self-image, weight control, and nutrition designed for use in health, home economics, science, and physical education classes.

Available from: The Network
290 South Main Street
Andover, MA 01810
617-470-1080

4-H Vision Education Series. (Not Dated)

A series of 18 student activity guides on various aspects of vision and health, and a leader guide that includes a curriculum matrix relevant to all activities. Also available are slide sets and tapes designed to supplement this program.

Available from: National 4-H Council
Educational Aids
7100 Connecticut Avenue
Chevy Chase, MD 20815
301-656-9000

Health Activities Project (HAP). (1979)

HAP involves fifth to eighth grade students with their own health and safety through hands-on, discovery-approach activities. By investigating their own bodies, the students learn firsthand how their bodies function, what their bodies can do, and, most importantly, that they can make changes in the way their bodies perform.

Available from: Health Activities Project
Lawrence Hall of Science
University of California
Berkeley, CA 94720

Health Curriculum Materials for the Elementary and Secondary Grades. Health: Strand I: Physical Health: Dental Health. (1970)

Two teacher guides, one for grades 7-9 and another for grades 10-12, containing explanations of concepts and major understandings relevant to dental health as well as teaching aids, learning activities, and supplementary information.

Available from: Health Curriculum Materials for the
Elementary and Secondary Grades
New York State Education Department
Bureau of Health, Drug Education, and Services
Education Building Annex, Room 964
Albany, NY 12224

Health Curriculum Materials for the Elementary and Secondary Grades. Health: Strand I: Physical Health: Sensory Perception. (1970)

Analogous to above, in the area of sensory perception and sensory disorders. Same address as above.

Ideal Science. (1978)

A teacher guide and ten student booklets comprising a comprehensive modular program on health science and the human body at the seventh and eighth grade levels.

Available from: Ideal Science
Michaele Broline
27277 Garza Drive
Saugus, CA 91350
805-259-2105

Know Your Body: Teacher's Guide. (Not Dated)

Designed to help teachers aid students in the creation of positive health habits and attitudes which will assist in the prevention of ill health by reducing risk factors. The "Blood Pressure Unit" is especially relevant to this module.

Available from: The Know Your Body Disease Prevention Program
The American Health Foundation
1370 Avenue of the Americas
New York, NY 10019
212-489-8700

Learning About Your Oral Health. (Not Dated)

Ready-to-use teaching kits available in junior and senior high levels for a prevention-oriented classroom program. Includes student materials, activities, lesson plans, overhead transparencies, etc.

Available from: American Dental Association
Order Department NDHM-JH
211 East Chicago Avenue
Chicago, IL 60611

MATERIALS FOR THE TEENAGE READER

Accepting My Body. (1981)

Presents the facts about adolescent physical growth and development in a sensitive and realistic manner and helps students develop a more positive body image.

Available from: Family and Community Health
Through Caregiving Program
Education Development Center, Inc.
55 Chapel Street
Newton, MA 02160
617-969-7100

Bell, Ruth. Changing Bodies, Changing Lives. New York: Random House, 1980.

A book for teenagers on sexuality and relationships.

McCoy, Kathy, and Wibblesman, Charles. The Teenage Body Book. New York: Simon and Schuster, 1980.

A book for teenagers designed to help them understand their own bodies.

Le Shan, Eda. What Makes Me Feel This Way? Growing Up with Human Emotions. New York: Macmillan, 1972.

A book designed to help seventh and eighth graders explore and understand their own feelings.

AUDIO-VISUAL RESOURCES

Take Joy: A Teacher's Guide to Six Systems of the Body. (1973)

A 16mm film designed to create a sense of joy and wonder about the body and six of its systems: skeletal, muscular, nervous, digestive, circulatory, and respiratory. An accompanying teacher guide contains duplicate masters and transparencies for related classroom activities.

Available from: The American Cancer Society
777 Third Avenue
New York, NY 10017
212-867-3700

Materials on oral health are available from:

The American Dental Health Association
Bureau of Health Education and
Audiovisual Services
211 East Chicago Avenue
Chicago, IL 60611

SOME NATIONAL HEALTH ORGANIZATIONS

The following list is a sampling of national organizations offering health information. It is not intended to be exhaustive, and will hopefully be updated periodically to identify organizations that have been missed or that have produced new resources useful in health education curricula. THOSE SEEKING PUBLICATIONS OR INFORMATION ASSISTANCE FROM THESE ORGANIZATIONS SHOULD ALWAYS DETERMINE IF THERE IS A LOCAL OR STATE AFFILIATE OF THE NATION ORGANIZATION AND CONTACT THE CLOSEST OFFICE FIRST. Addresses and phone numbers can be checked through telephone directories, libraries, and local health agencies. ALSO HEALTH INFORMATION AND HELP IN IDENTIFYING OTHER VALUABLE RESOURCES CAN FREQUENTLY BE OBTAINED FROM OFFICIAL STATE AND LOCAL HEALTH AND EDUCATION AGENCIES, COLLEGE AND UNIVERSITY HEALTH EDUCATION PERSONNEL, AND/OR LIBRARY REFERENCE GUIDES. Many of the publications and services are free to the public; others involve a nominal charge.

Action on Smoking and Health
2013 H St., N. W.
Washington, D.C. 20006

Al-Anon Family Group Headquarters, Inc.
P. O. Box 182
Madison Square Station
New York, NY 10059-0182

Alcoholics Anonymous
P. O. Box 459
Grand Central Station
New York, NY 10163

American Academy of Dermatology
820 Davis
Evanston, IL 60201

American Alliance for Health, Physical Education, Recreation and Dance
Association for the Advancement of Health Education
1900 Association Drive
Reston, VA 22091

American Cancer Society
777 Third Avenue
New York, NY 10017

American Council on Marijuana and Other Psychoactive Drugs
6193 Executive Boulevard
Rockville, MD 20852

American Dental Association
Bureau of Health Education and Audiovisual Services
211 E. Chicago Avenue
Chicago, IL 60611

American Diabetes Association
Two Park Avenue
New York, NY 10016

American Dietetic Association
430 N. Michigan Avenue
Chicago, IL 60611

American Hearing Society (formerly National Association for Hearing and Speech Action)
10801 Rockville Pike
Rockville, MD 20852

American Heart Association
7320 Greenville Avenue
Dallas, TX 75231

American Hospital Association
Department of Order Processing
840 N. Lake Shore Drive
Chicago, IL 60611

American Lung Association
1740 Broadway
New York, NY 10019

American Medical Association
Department of Health Education
535 N. Dearborn Street
Chicago, IL 60610

American Medical Association Auxiliary
535 N. Dearborn Street
Chicago, IL 60610

American Optometric Association
Attn: Communications Division
243 N. Lindberg Boulevard
St. Louis, MO 63141

American Osteopathic Association
Public Relations Department
212 E. Ohio Street
Chicago, IL 60611

American Pharmaceutical
Association
2215 Constitution Avenue, N.W.
Washington, DC 20037

American Podiatry Association
Council On Education
20 Chevy Chase Circle, N.W.
Washington, DC 20015

American Red Cross
17th and E Streets, N.W.
Washington, DC 20006

American School Health
Association
P.O. Box 708
Kent, Ohio 44240

American Social Health Association
260 Sheridan Avenue
Palo Alto, CA 94306

Arthritis Foundation
1314 Spring Street
Atlanta, GA 30309

Association for Retarded Citizens
(formerly National Association
for Retarded Children)
P.O. Box 6109
Arlington, TX 76011

Asthma and Allergy Foundation of
America
1302 18th Street, N.W., Suite 303
Washington, DC 20036

Blue Cross/Blue Shield Association
676 N. Saint Clair Street
Chicago, IL 60611

Cystic Fibrosis Foundation
Suite 558
3384 Peachtree Road, N.E.
Atlanta, GA 30326

Epilepsy Foundation of America
4351 Garden City Drive
Suite 406
Landover, MD 20785

Family Service Association of
America
44 E. 23rd Street
New York, NY 10010

Group Against Smoker's Pollution
P.O. Box 632
College Park, MD 20740

Kimberly-Clarke
Life Cycle Center
2100 Winchester Road
Neenah, WI 54956

Leukemia Society of America
800 Second Avenue
New York, NY 10017

March of Dimes, Birth Defects
Foundation
1275 Mamaroneck Avenue
White Plains, NY 10605

Mental Health Materials Center
30 E. 29th Street
New York, NY 10016

Metropolitan Life Insurance Co.
Health and Safety Education Div.
One Madison Avenue
New York, NY 10010

Muscular Dystrophy Association
810 Seventh Avenue
New York, NY 10019

National Center for Health
Education
30 E. 29th Street
New York, NY 10016

National Council on
Alcoholism, Inc.
733 Third Avenue, Suite 1405
New York, NY 10017

National Cystic Fibrosis
Research Foundation
60 E. 42nd Street, Suite 1563
New York, NY 10017

National Dairy Council
6300 N. Rier Road
Rosemont, IL 60018

National Easter Seal Society
2023 W. Ogden Avenue
Chicago, IL 60612

National Fire Protection
Association
Battery March Park
Quincy, MA 02269

National Genetic Foundation
555 W. 57th Street
New York, NY 10019

National Hemophilia Foundation
19 W. 34th S., Suite 1204
New York, NY 10001

National Kidney Foundation
Two Park Avenue
New York, NY 10016

National Mental Health Association
1800 N. Kent Street
2nd Floor
Arlington, VA 22209

National Multiple Sclerosis
Society
20 E. 42nd Street
New York, NY 10017

National Safety Council
444 N. Michigan Avenue
Chicago, IL 60611

National Society for the Prevention
of Blindness, Inc.
79 Madison Avenue
New York, NY 10016

National Tay-Sachs and Allied
Diseases Association, Inc.
92 Washington Avenue
Cedarhurst, NY 11516

Planned Parenthood Federation
of America, Inc.
810 Seventh Avenue
New York, NY 10019

Public Affairs Committee, Inc.
381 Park Avenue South
New York, NY 10016

Tampax, Incorporated
Department HI
P.O. Box 7001
Lake Success, NY 11402

United Cerebral Palsy Association
330 E. 34th Street
New York, NY 10001

United Parkinson's Foundation
220 S. State St., Room 1808
Chicago, IL 60604

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Arthritis Information Clearinghouse
1700 N. Moore Street
Arlington, VA 22209

Cancer Information Clearinghouse
National Cancer Institute
Office of Cancer Communications
Building 31, Room 10A18
9000 Rockville Pike
Bethesda, MD 20205

Center for Health Promotion
and Education
Division of Health Education
Centers for Disease Control
Atlanta, GA 30333

Clearinghouse on the Handicapped
330 C Street, S.W.
Washington, DC 20201

Consumer Information Center
Pueblo, CO 81009

Environmental Protection Agency
Public Inquiries Center, PM 211-B
401 "M" Street, S.W.
Washington, DC 20460

Food and Drug Administration
Office of Consumer Inquiries (HFE-88)
5600 Fishers Lane
Rockville, MD 20857

Food and Nutrition Information
Center (FNIC)
3101 Park Center Drive
Alexandria, VA 22302

High Blood Pressure Information
Center
120/80 National Institutes of
Health, Box DR
Bethesda, MD 20205

National Center for Education in
Maternal and Child Health
3520 Prospect Street, N.W.
Washington, DC 20007

National Clearinghouse for
Alcohol Information
P.O. Box 2345
Rockville, MD 20857

National Clearinghouse for
Drug Abuse Information
5600 Fishers Lane, Room 10A43
Rockville, MD 20857

National Clearinghouse for Family
Planning Information
P.O. Box 2225
Rockville, MD 20857

National Clearinghouse for
Mental Health Information
Public Inquiries Section
5600 Fishers Lane, Room 15C17
Rockville, MD 20857

National Diabetes Information
Clearinghouse
Box NDIC
Bethesda, MD 20205

National Digestive Diseases Education
and Information Clearinghouse
1555 Wilson Blvd., Suite 600
Rosslyn, VA 22209

National Health Information
Clearinghouse (NHIC)
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Washington, DC 20013-1133

National Highway Traffic Safety
Administration (NHTSA)
U.S. Department of Transportation
400 7th Street, S.W.
Washington, D.C. 20590

National Injury Information
Clearinghouse
5401 Westbard Avenue, Room 615
Washington, DC 20207

National Institute for Drug Abuses
5600 Fishers Lane
Rockville, MD 20857

National Institutes of Health
Bethesda, MD 20205

National Heart, Lung, and Blood Institute
Public Information and Reports Branch
Building 31, Room 4A21
National Institutes of Health
Bethesda, MD 20205

Office of Consumer Affairs
Washington, DC 20201

Office on Smoking and Health
Technical Information Center
Park Building, Room 116
5600 Fishers Lane
Rockville, MD 20857

President's Council on Physical Fitness and Sports
450 Fifth Street, N.W.
Suite 7103
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U.S. Government Printing Office
Washington, DC 20402

U.S. Consumer Product Safety Commission
Washington, DC 20207

U. S. Department of Agriculture
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